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Original Communications.

ARTICLE I.—*The Ophthalmoscopic Appearances in Cases of Exophthalmic Goitre.* By REUBEN A. VANCE, M.D., New York City.

This peculiar neurosis, like many other affections of the nervous system, is attended with morbid changes in the intra-ocular structures which can be recognized by the aid of the ophthalmoscope. The symptoms of the disease, however, are so marked, the exophthalmos and enlargement of the thyroid gland, with palpitation of the heart, so characteristic, that the diagnosis of the affection requires no aid from this method of physical exploration. Yet, so long as there are unsettled points, or diverse views, in relation to the pathology of any morbid process, attention to the visible phenomena and careful observation of those changes which can be rendered apparent, should not be neglected. This is especially the case where nervous structures are involved, either primarily or secondarily, and is my reason for calling attention to the ophthalmoscopic appearances presented in ten cases of this disease which have been under my care at various times during the past five years. The intra-ocular structures were affected as follows:

In 2 cases there was anæmia;

In 7 cases there was congestion; and

In 1 case there was congestion, with œdema of the disk.

The patients were all under thirty years of age; eight were females and two were males; organic disease of the heart was discovered in six cases—one male and five females; the three characteristic symptoms, exophthalmos, enlargement of the thyroid gland, and palpitation, were noted in all but one case—in this patient the pulse was 120 when in repose, the thyroid was quite large and palpitation of the heart so distressing as to seriously interfere with sleep, yet the eyes did not protrude ordinarily, but only became prominent under excitement.

The intra-ocular morbid appearances are mainly those due to vascular disturbance of the parts in the region of the optic nerve entrance. In nine cases they were limited to variations in the calibre, course, and state of distension of the blood-vessels of the papilla and retina, while in one, these changes were supplemented by an œdematous state of the disk in the right eye, the left remaining congested. The ophthalmoscopic appearances were modified quite appreciably, in cases of congestion, by mental excitement, or physical exertion, but in anæmic cases, such influences produced no perceptible changes, although the exophthalmos was invariably increased, and the other phenomena of the disease were rendered more apparent.

In two cases the state of vascular fullness was much less than in health. The retinal arteries were small and indistinct, straight in their course and joined by few branches; the veins were likewise diminished in size, were less darkly colored than in health, and presented the double outline generally observed in the arteries only; the disk was not of its natural color, was unusually transparent, and with the direct examination, its fibrous structure could be readily discerned, while the vascular branches apparent in health had disappeared from view. In these cases physical examination could detect no cardiac disease of an organic nature, and, as has already been stated, neither mental excitement nor physical exertion had any effect upon the character of the intra-ocular appearances.

In the cases of congestion, the ophthalmoscope revealed appearances directly the reverse of those just described. The vas-

cular supply of the intra-ocular structures was in excess of the standard of health, and varied in degree from slight hyperæmia to congestion so extensive as to render the papilla of the same color as the surrounding choroid and retina. The arteries distributed to the retina were larger than in health, their branches more numerous and their course less direct; the disk was variously colored, at times its normal creamy-white hue was changed to a rosy tint, and again it assumed the same color as the surrounding structures—in such cases its situation could be discovered only by tracing the retinal vessels to their point of exit; the veins were dilated and tortuous, and at the points where they were joined by branches, the main trunks presented irregular enlargements, in some cases closely simulating hæmorrhagic extravasations. New vessels were developed from the sides of the disk, and subdivided into branches of considerable size. Venous pulsation, especially in the main vessels as they traversed the papilla, was commonly observed, and in one patient, well marked arterial dilatation and contraction synchronous with the cardiac systole and diastole, was a constant phenomenon.

In one patient, presenting marked evidences of intra-ocular hyperæmia, an examination made a few hours subsequent to a violent paroxysm of dyspnœa, attended with spasm of the glottis, violent palpitation and great mental excitement, revealed congestion with œdema of the disk in the right eye, while the congestive appearances in the left were unchanged. The right disk, which previously had been of a deep red color, was opaque and striated, grayish-white in appearance and irregularly enlarged—its nasal side projecting abruptly, the infiltration gradually diminishing towards the temporal margin where it was in the same plane as the adjacent retina. The retinal veins were quite large, tortuous, and presented circumscribed dilatations, while the arteries were nearly normal in appearance—much smaller than they had been previously, or than those of the left eye.

The generally accepted view of the pathology of this disease as a congestive neurosis, attended with secondary changes in the tissues of the organs principally affected—the walls and orifices of the heart, the substance of the thyroid gland, and the intra-orbital structures—would account for the ophthalmoscopic appearances in the majority of the cases I have referred to. The increased

throbbing of the thyroid, the greater projection of the eyes, and the distressing palpitation under emotional or physical excitement, coincide so fully with the results of experiments performed on the sympathetic, together with its known physiological action in parts where its effects can be observed, renders the inference almost irresistible, that to perverted activity of that nerve, is to be ascribed the curious phenomena of exophthalmic goitre. The congestive changes due to vaso-motor paresis would explain the post-mortem appearances observed in the thyroid, the heart, and the parts behind the eye, and, as one would imagine, the changes rendered visible, during life, by the aid of the ophthalmoscope. That it does not do so in all cases, the patients presenting evidences of intra-ocular anæmia that I have alluded to, show most conclusively. It is possible that some local change, by interfering with the intra-ocular circulation, may produce this anæmic state, and at one time, from certain other circumstances, I was led to believe that secondary changes in the congested tissues behind the eye, compressing the nervo-vascular trunk, was the cause of the intra-ocular appearances in these exceptional cases. Notwithstanding the many objections that can be readily urged against this explanation—the most cogent of which is the peculiar nature of the ophthalmoscopic appearances themselves—I am disposed to adhere to it until some better one is offered.

In the remaining cases the intra-ocular evidences of congestion in its various degrees, were observed to fluctuate with exacerbations and remissions of the disease. An increase in the severity of the symptoms was accompanied by an increased degree of intra-ocular hyperæmia, and *vice versa*. In one instance œdema of the disk was observed as a consequence of an extreme degree of congestion, and this circumstance is of importance as an illustration of the fact that that condition can be developed from local derangement of the circulation, and is not invariably of intra-cranial origin as is frequently stated.

ARTICLE II.—*Cholera Infantum.* By ALEX. S. VON MANSFELDE, M.D., Chicago, Ill.

"Caloric not only expands living tissues, thereby diminishing vital affinity, but it also increases their susceptibility. It is chiefly by its power thus to diminish the tonicity or compactness of the tissues, while it increases their irritability, or susceptibility, that caloric, or a high temperature, becomes an efficient predisposing or existing cause of disease. Acting more directly on the cutaneous surface, and, both by continuity of structure and close physiological sympathy, on the whole internal mucous surface, also, a high atmospheric temperature renders these structures morbidly sensitive, while their expansion renders them more lax, and thereby puts them in the most favorable condition for sudden and rapid fluxes of fluids into and through them."—*Clinical Lectures of N. S. Davis, page* 151.

I am satisfied that the prime cause of summer complaint, which the learned Doctor calls "*high temperature,*" is the identical trouble, and that teething, miasmata, etc., are minor accessories toward producing this so fatal disease of our children.

But I cannot agree with him in regard to the ultimate effect caloric has upon the vegetable or animal creation.—See *Medical and Surgical Reporter, Vol.* 25, *page* 9.

Is the expansion incident to the influence of heat the same all through the body? This is certainly not the case. It is an established fact, that solid bodies are better conductors of heat than fluids, and that heat only exerts its power through the interstices of atomic elements, which it has the power of enlarging. Now suppose that heat reaches the mucous apparati of the interior body, it will surely prove its influence first upon the cell walls of the mucous cell structures, and if it have any effect upon them, it will exert it before the cell contents shall perceive the slightest elevation of temperature.

Now this state of affairs is not admittable for certain organs only, for heat is not so partial, and yet the kidneys have suspended the normal action already before the fluxes from the intestinal canal take place. Does heat not affect the extensive mucous surface of that organ, or that of the lungs, the sniderian membrane and those of the liver?

It is always better to take for the explanation of our theory a single cell of a diseased or deranged organ, and perceive the changes produced in the same.

Take for an example a round cell of the rete mucosum of the skin and submit it to the influence of heat; *expansion* takes place, but of what? Certainly not of the whole cell, but simply of its cell walls; and what is the consequence? A flux of the cell contents, through the enlarged interstices, existing in its membranous cover, follows.

This egress of the cell fluid normally takes place by every *contraction* of the living cell, *absorbing* new materials by its *expansion* from the adjacent oxidized blood.

Now place in contact with the cell expanded by heat, after it has lost a part of its contents, oxidized blood, will it take up from this medium the part that shall establish the equilibrium? Or will it not take up particles of entirely different physical calibre to those absorbed by the natural process of imbibition and thus change at once the whole body from a physiological to a pathological condition? (perversion of structure). If so, does the condition of a patient suffering from summer complaint justify such deductions?

We can nowhere see a general change of the organs of the body in cholera infantum.

One more effect of heat upon organized bodies is the loss of their watery parts. We know that heat dries up vegetable and animal particles, extracting therefrom their liquid parts, which is the necessary solvent and producer of organic functions.

Please to take the example of the cell of the malpighian layer of the skin again, and observe the consequences of an abstraction of its fluid parts, and note the difference.

In the former case there would be a loss of fluid, which surely could readily be supplied; but here the material is wanting, the contractions and dilations go on, but in a lessened degree, until there is no more stimulus for dilating the *not contracted* but *collapsed* cells. This collapse of the general structure is hastened by the loss of tonicity, which is produced through the lessened work of those organs, whose secretions are the true food of the more vital parts of the body, especially the nervous system—we speak *mostly* of the *liver* and its *products*.

We wish to be understood, that expansion of the structures,

is, the cell walls of the organic molecules, the cells, must be followed by hastened cell life, absorption and secretion of matter, until stagnation, the climax of such superwork, is reached; known as the pathological condition, inflammation.

Whereas the pathological index to cholera infantum is a general atonicity of the soft structures of the body, in no case to be allied with inflammation—it is the very opposite to this condition.

If our observation prove true, that is, that not excessive *expansion* by heat, but simply a lessened percentage of water, is the cause of summer complaint, we may justly be asked for a proof of association of cause and effect, and hasten to answer with a quotation from our article above referred to:

"The collapsed cells have no power to retain their fluid portion, and this oozes away through the pari passu prostrated excretory channels without restraint; and not only is this the case with the mucous tissues, but with the glandular structures and muscular fibres—they are all subject to the same law and consequences.

"These exudations and secretions, though governed by the same cause, will, under different circumstances, give rise to a different train of symptoms. In the stomach the acid secretion will produce upon the denuded surface an incontrolable effort at vomiting. The bowels are incapacitated to absorb any fluid; the brain, though at first painfully alive to the wants of the body, is lulled to rest by the same hand, till at last the exudate into the cranial cavity presses upon it, and soon the consequences are witnessed, nerve influence loses its power, and the last help vanishes.

"Will any one under such impressions venture to give a nerve sedative to control the action of the stomach, or prescribe chalk and magnesia usta controlling the acidity of the organic exudate, or an astringent to compel a lessened discharge from the bowels, driving the fluid so much the sooner into the cranial cavity, and hasten the advent of death, or give an anodyne to control the maniacal manifestations of anguish, knowing that only too soon the opposite state of affairs will take place?"—*Med. and Surg. Reporter, Vol. 25, No. 1.*

Referring to the all absorbing topic of treatment, we may be pardoned again if we quote from Dr. Davis' Clinical Lectures. On page 157 he says:

"Thus, in the first stage of those cases characterized by simple

serous discharges, either by vomiting or purging, the indications are to allay the morbid irritability of the mucous membrane, and to increase the tone or contractility of the capillaries; to fulfill these requires the judicious combination of a tonic and anodyne."

The doctor asserts, on page 151, that *caloric* and its consequence, *expansion*, are the prime trouble; why does he not now, when he comes to the practical deductions of his pathology, keep up the chain of logic? Why not counteract *caloric* by its natural antagonist, *cold?*

Can this not be done very easily? How grateful it is to the body of the sufferer to be immersed into water somewhat colder than the body! Does he not seemingly regain his strength?

Or does the learned gentleman assert that the partaking of phloridzine, opium, sugar of lead, or calomel, lends wings to high atmospheric temperature?

We confess the good effect of the tonic with the stimulant to the liver and its accessories, but see no reason why the doctor should give them, excepting he answers the above question in the affirmative.

We assert that the cause of summer complaint is high temperature and its effect in lessening the percentage of the *watery ingredients* of the animal organism, thereby producing collapse of the cellular structures of the body, from which mechanically the watery element exudes.

Our therapeutic deductions are of the so-called allopathic style: "contraria contraribus curantur." We have a defect of water, and we supply it. Our cell structure works imperfectly, and is collapsed; we put it in a condition to resume healthy action by access to water, and encourage the trial by tonics and stimulants. We are aware of the lessened animal heat caused by the evaporation of the fluids of the body, and proven by the rapid consummation of all the fat of the system for that purpose; and we hasten to supply this material in the best manner possible. Our patient rapidly assumes the robes of health, and attests the correctness of our deductions.

Our saying and gainsaying may be somewhat incoherent for want of time for careful preparation, but our treatment of the disease stood the test of the last two summers, and was, to say the least, satisfactory to ourselves.

The defect of water was best replenished by baths of a medium temperature, followed by an inunction with a non-irritating oil; best is almond oil;—the object of the latter being a restriction of evaporation from the surface and the consequent loss of animal heat. It is also known to the profession, that in bathing, the body takes up a considerable amount of water.

In conjunction with this purely hygienic regimen, we give small doses of pepsine, subnitrate of bismuth and sugar, taking care to direct small doses repeatedly to be given, with a certain amount of water, milk-whey or milk, as the case may warrant, the prime object being the insurance of the administration of some fluid at stated intervals, which, without the medicine, in nine out of ten cases would be neglected, at the same time the latter aid the digestive apparati in their march to health.

Finally, we prescribe the following:

R. Olei Morrhuæ, - - - - - - - - oz. ss.
Emulsionis Gum. Trajacanthi, - - - - oz. jss.
Quiniæ Sulphatis, - - - - - - - - grs. iij.
Chloroformi, - - - - - - - } *aa*, gtts. x.
Tincturæ Opii Simplicis, - - - - }
Tincturæ Columbæ, - - - - - - dr. ij.
Syrupi Ipecacuanhæ, - - - - - - dr. j.
Syrupi Rhei Aromatici, - - - - } *aa*, dr. ijss.
Syrupi Pruni Virginiensis, - - - }

A teaspoonful every hour or two to a child a year old.

The trajacanth emulsion is made by dissolving 2 drachms of gum trajacanth in 15 ozs. of water and 1 oz. of glycerine. A simple admixture of this emulsion with the other ingredients insures a perfect emulsion that will remain unchanged for a long time.

And what is the object of this medication?

The ol. morrhuæ, in combination with the gum, will cover the denuded surfaces over which it passes better than any other matter, and as the assimilation process is not altogether interfered with, some of the oil will be absorbed and aid in building up the lost animal heat.

The action of quinine is that of a substitute for an aliment lost by the inactivity of the liver, the province of which is either directly or indirectly to keep up the form of the cell structures, or their power of contraction and dilation.

The action of the columba and syr. rhei aromat. is that of excitors of liver function; but they are of benefit only when conditions are established that will favor renewed action—(*addition of fluid*)—otherwise they would be of no avail.

The ipecac, opium, and chloroform, guard the action of the other agents and keep the brain supplied with nourishment (*blood*), the anæmia of which is so dangerous to the patient.

The syrup of wild cherry is added to produce a better taste of the mixture.

In writing this article, we have no desire to simply criticise, for we know the value of the lectures above alluded to too well to be governed by so small a motive; but we wish to draw the attention of practitioners to this subject by daring to attack the lion, doing thus all we can for suffering childhood.

Since writing the above, our attention was drawn by Dr. F. Schaller, of this city, to an article in the "*Jahrbuch fur Kinderheilkunde*," No. 2, pages 176 and 177, written by Dr. Werthheimber, of Munich, subject, cholera infantum.

In this article the doctor advocates very strongly the administration of tea, good black China tea infusion. He foots upon the fact that the whole nervous system is relaxed, not only *per se*, but through the starvation process going on in the brain itself, anæmia of the same.

Tea, as well known, is a direct stimulant to the nerve centres and insures a renewed action of the same, and upon this action of the *drug* rests its good influence in cholera infantum.

But how does this agree with the anodyne principle of the lectures referred to?

ARTICLE III.—*A Case of Strangulated Femoral Hernia Successfully Punctured, with Subsequent Spontaneous Reduction.* By J. SUYDAM KNOX, M.D., Chicago.

Maria Van D——, a feeble colored woman, about 73 years of age, has suffered from femoral hernia of the right side, ever since her last confinement, nearly thirty years ago. On many occasions has it become strangulated, and been reduced by taxis. In the evening of the 20th of August, 1872, I was called to see her. The

hernia had been strangulated over twenty-four hours, presenting a tumor over three inches in diameter and nearly five inches long. The patient was much prostrated and suffering acutely. Chloroform was twice administered; first, to reduce by taxis, and when that failed, a second time, for the purpose of operating; but in each case its use had to be abandoned on account of the dangerous symptoms it produced. Under such circumstances the hernial tumor was punctured. The hypodermic syringe was used. After unscrewing the cap and removing the piston, the needle was pushed its full length into the apex of the tumor, and immediately a bloody serum, of decidedly fœcal odor, commenced to flow, without any escape of gas. After eight and a half ounces had thus escaped, the hernia reduced itself spontaneously. A third of a grain of morphia was then injected subcutaneously.

The patient was visited on the two following days. There was no increase of temperature, and no abdominal tenderness. The slight puncture of the intestine seemed to provoke no peritoneal inflammation, nor was there any apparent leakage from the gut after reduction was accomplished. In fact, recovery was complete as soon as the hypnotic effect of the morphia had passed off.

I report this case simply as being a suggestive one. Every one who has operated for strangulated hernia, knows the care and skill required; the danger of injury to the gut, or close-lying artery; the occasional result of peritonitis, or artificial anus; and in addition, the small percentage of risk which always accompanies wounds of large cavities and the use of anæsthetics.

Every surgeon also is familiar with the general success of paracentesis of the thorax, abdomen and scrotum, and with the fact that tapping in hydro-pericarditis and puncture of the intestines in excessive tympanitis, have been performed with impunity.

Why then should not puncture be generally adopted for strangulated hernia?

My own impression is, that, as in this case, the contents of the strangulated gut are always largely transuded serum, the result of compression of the veins at the hernial ring—such transudation invariably happens where the venous circulation is arrested, the arteries remaining patulous. If this transuded fluid is removed, the contents are no more than readily entered the ring and can as easily be returned.

Again, puncture can be followed by but one of the many results of the use of the knife, viz: peritonitis.

Briefly then, if the contents of the strangulated gut are fluid, and if puncture be innocent of evil consequences, it should be preferred to the use of the bistoury for the following reasons:

1. It is most readily and easily performed.
2. It is attended by far less risk of injury.
3. It requires no anæsthesia.

ARTICLE IV. — *Protracted Abstinence from Food.* By A. FORD, M.D., of Bowne, Kent Co., Mich.

April 25, 1873, was called to see Mr. M., aged 74 years. Farmer; born in the Highlands of Scotland; five feet ten inches in height; quite fleshy.

Found him suffering from what appeared to be bilious colic; severe pain in the epigastric region, with constipation of the bowels. Relieved the pain with hypodermic injection of morphia, and then gave physic. Did not get an operation for three days, then used the syringe, which relieved him.

May 3, was called again. Symptoms the same, with the addition of excessive nausea and vomiting. The pain came on periodically, about eleven o'clock P. M. Through the day he was nearly free from pain.

Failing to relieve him, and being obliged to leave town for two days, sent for Dr. M. to see him for me. He gave him large doses of calomel. After some two days got another operation, with partial relief.

He had now become somewhat emaciated, and on a very careful examination, discovered a small tumor in the region of the pylorus. Dr. M. saw him with me again. Concluded that the tumor, though small, pressed upon, or involved the pylorus so as to prevent the contents of the stomach from passing. Put him upon opium to keep him as easy as possible, as long as life should last. He now took no food, and even water was rejected within a few minutes after taking it.

Some of the friends were not satisfied, and so sent for Dr. L.,

an old gray-headed man, a former Regular, but now a convert to "similia similibus." He came in my absence. Said the young doctors were all wrong, that the trouble was with the liver, that there was an abscess, which pressing upon the stomach, caused all the trouble. That it was too late now, but if he had seen him in time *he* could have cured him.

For twenty-five days the patient took no food, and had no movement of the bowels. Died at midnight, June 14, of sheer starvation. There was so much dissatisfaction among the relatives, that a *post mortem* was decided upon. I made the examination eighteen hours after death. Our aged homœopathic friend was present. Found the liver perfectly healthy; bowels empty, except a little gas; stomach contained two or three ounces of water, drank just before he died. There was no *diseased* appearance about anything; but partially surrounding the pylorus, and an inch or two of the duodenum, was an irregular-shaped tumor, of perhaps four to six ounces weight, which in a recumbent posture completely closed the outlet of the stomach. The tumor was of a grayish-white color, and appeared to be fibro-cartilaginous, and looked like a perfectly healthy abnormal growth.

Selections.

Asiatic Cholera; its History, Causes and Prevention. By H. A. Buck, M.D., St. Louis, Mo.

We have very good authority for believing that epidemic cholera had its origin in the "*Black Death*" or "*Oriental Plague*" of the 14th century. And cholera, unquestionably, in all of its various forms, has destroyed more lives then all of the other epidemics taken together.

We are informed by historians that it swept off one-fourth of the inhabitants of the Old World, in the short period of four years.

England lost one-half of its population—London lost 100,000 in four months, and other cities in proportion.

It was preceded by great revolutions in the earth. From China to the shores of the Atlantic, the foundations of the earth were shaken, the atmosphere was in continual commotion; and endan-

gered, by its poisonous influences, both vegetable and animal life. These terrible convulsions are said to have begun in 1333, fifteen years before the *plague* broke out in China.

According to the traditions of the Chinese, the pestilence was followed by torrents of rain, and great floods, and more than 400,000 people perished in consequence of the floods. A few months afterwards an earthquake caused an extensive range of mountains to sink and disappear, and in its place a lake was formed, more than 100 leagues in circumference—where thousands found a watery grave.

It is estimated that 4,000,000 people perished in China in the year 1337.

Europe was also visited with earthquakes and other atmospheric phenomena. These convulsions continued till 1347, when the plague or cholera, in its primitive form, broke out in the East.

This epidemic entered the western countries of Asia from China, in the year 1347, and here the historian obtains the first certain knowledge of the character of the disease. From China the route of commerce ran to the north of the Caspian Sea through Central Asia—from thence to Constantinople, the medium of communication between Asia, Europe and Africa. Thus in all directions contagion made its way, and doubtless Constantinople and the harbors of Asia Minor were the great centres of infection, whence it spread all over the world. People were struck down by *Black Death* as if by lightning, and the young and the strong were more frequently its victims than the aged and infirm. The descriptions of the disease given by historians, are rather indifferent. They inform us that sometimes it commenced with bleeding at the nose, which was a sure sign of death. Both in men and women, tumors in the groin, and inside of the thigh appeared at the beginning. These varied in size, but were frequently as large as an egg. Similar tumors appeared afterward all over the body, and black and blue spots came out on the arms and thighs.

These spots were indications of the fatal termination of the disease. No power of medicine brought relief; almost all died in from one to three days, and generally without fever or other symptoms—such was the form that the *Black Death* assumed in 1347, and three years following. In 1360 and 1373, it assumed a milder form, and then it was called the *Oriental Plague.* The tumors no longer appeared, and bleeding at the nose was seldom known to occur.

It has been supposed by excellent medical authority, that the form thus assumed by the *Oriental Plague*, is identical with the cholera of the present age, and that the term *Black Death* applied to it, was derived from the livid and frequently spotted appearance of patients in cases of malignant cholera. The most reliable estimates given, state that China lost 13,000,000 by *Black Death* or *Oriental Plague.*

India was almost depopulated, and Tartary and Syria, and all the adjoining countries, were literally covered with dead bodies.

Cyprus, it is said, lost all of its inhabitants; and ships without crews were seen, long after, floating about in the Mediterranean. It was reported that in the East, excepting China, 23,000,000 fell victims to this pestilence.

No climate was a barrier to its devastating and death-dealing power, it penetrated the icy regions of Greenland, Iceland, Norway and Denmark.

It reached the British Isles in 1349, and Russia in 1351, and according to all accounts it was not as fatal in the cold climates as it was in the hot climates. Thus we have the form and character of what is supposed to have been epidemic cholera in its primitive state.

Quite a period of time elapses before we have any description of this epidemic again, although it is supposed by some to have prevailed in a milder form in those countries where it first made its appearance.

It visited London again in the year 1666, and the mortality averaged one-fourth part of the population. During the cholera of 1832, the worst plague that has visited London since 1666, the deaths were only one out of two hundred and fifty inhabitants. This decrease of mortality was owing to the sanitary improvements in regard to cleanliness.

The next description that we have of it, is by a physician attached to the Dutch East India Company. His book was published in Batavia, in 1629. In describing what he calls epidemic cholera morbus, he says: "It is a disease of the most acute kind, and therefore requires immediate application. The animal spirits are speedily exhausted, and the heart, the foundation of life, is overwhelmed with putrid effluvia. Those who are seized with this disease generally die, and that so quickly as in the space of twenty-four hours at most. This disease is attended with a weak pulse, difficult respiration, and coldness of the extremities, to which are joined great internal heat, insatiable thirst, perpetual watching, and restlessness and incessant tossing of the body. If, together with these symptoms, a cold and fetid sweat should break forth, it is certain death." This I consider a very good description of the epidemic cholera of the present age.

During the latter part of the 17th century, and until the year 1774, the cholera appeared to have confined its ravages almost exclusively to the Hindoos.

Hindoo practitioners appear to have been familiar with its symptoms, or at least a disease closely resembling it, which they called *vishuchi*, a term in their language signifying vomiting and purging. In the first campaigns of the British troops in India, in the year 1774, cholera presenting all the symptoms known to char-

acterize the epidemic, made its appearance at Madras, and proved very fatal to both the European and native soldiers, carrying them off very quickly after they were attacked. It is asserted that over 60,000 people perished between the years 1774 and 1781. The disease prevailed at various times between the years 1783 and 1790, and always with the same symptoms and with the same fatal results.

In the year 1783, the cholera broke out at the sacred bathing place on the Ganges. This was the year of the great pilgrimage; it is said 2,000,000 were assembled at this time. In eight days 20,000 fell victims. It did not extend beyond the place of bathing, and ceased on the dispersion of the multitude. In 1817, it broke out again on the banks of the Ganges, causing a greater destruction of life than at any other time.

By the end of 1818 its ravages embraced nearly all of Hindostan, and in 1819 it appeared in Java, in the Isles of France and Bourbon, and over India and China; in 1821, in Bagdad, Arabia; and in 1822, in Persia and Syria. In 1823 it broke out in Antioch, Tripoli, and all along the Mediterranean coast. In 1823 and 1827, the disease continued its ravages in China and India—in 1828 the Russian Empire was again invaded. The cold of the preceding winter stayed its progress, but the summer of 1829 found it committing terrible havoc in the same localities.

In 1830 it appeared in the Georgian cities, and in Poland. In 1831 in Warsaw, St. Petersburg, and all the principal cities of Russia, Prussia, Austria and Italy; and the same year it made its appearance in England, Scotland and Ireland. In 1832, in the month of March, it appeared in Dublin, and in May, in Paris.

Its first appearance in the New World, was in June, 1832, at Montreal and Quebec, and during its prevalence the mortality was great.

Since its appearance on our shores it has been almost periodical, visiting a place in its epidemic form once in sixteen or seventeen years, and remaining from one to three years, during the hot months of the year, if it found a soil congenial for its germs to propagate in.

Epidemic cholera has appeared in St. Louis twice* at an interval of about sixteen years. On its appearance in 1849, there were some 65,000 inhabitants in St. Louis. It is thought some 15,000 left the city; the statistics give the mortality at 6,000.

Let us compare the mortality of St. Louis with Boston and Baltimore, where strict sanitary laws were enforced in the same years. Boston appropriated a sum of money sufficient to cleanse and purify the streets, alleys and yards. The work was done thoroughly and effectively.

* *Three times.*—First in 1833 and 1834. We have little more faith in the sixteen or seventeen-year periodicity of cholera than we have in the "forty-year flood of the Mississippi."—Ed. St. Louis M. & S. Jour.

In St. Louis no attempt was made to remove the filth, or in any way to improve the sanitary condition of the city, except what may have been done by a few individuals on their own premises.

Now compare the results. Boston, out of a population of 140,000, lost but 327 by cholera, from all causes, 5,000—while in St. Louis, with less than 65,000 inhabitants, 6,000 persons died of cholera alone.

In Baltimore $40,000 was appropriated by the city council, for the work of purification, in anticipation of the coming epidemic. The result was, that out of a population of 160,000, but 853 died of cholera. Showing, I think, conclusively, that cholera can be prevented from appearing in an epidemic form.

I was in New York when epidemic cholera prevailed in 1850, 1851 and 1852. It was the last of September when the cholera broke out in an orphan asylum. The Superintendent took the orphans out on a picnic, and immediately on their return the cholera attacked them in a very malignant form. The Superintendent and some thirty out of ninety cases died. I think the great mortality in the asylum was in consequence of worthless nurses (as they had to depend on the alms-house for nurses on that occasion), badly ventilated rooms, and not separating the sick from the well. I was a student of medicine, and helped to take care of them, and formed a very unfavorable opinion of the curative properties of medicine in epidemic cholera at that time. In 1866, when the cholera attacked the inmates in any of the public institutions and hospitals in New York, they removed them to wards by themselves, and they disinfected the wards, and the consequence was, there were very few cases compared with former epidemics. I was one of the Ward physicians of the Sixth Ward, in St. Louis, in 1866. Our Ward extended from the levee to the city limits west.

The cholera that year was confined mostly to the crowded tenement buildings on the principal streets and alleys. There were a few cases in the western portion of the city, where the buildings stood isolated, and it was thought by some, it was in consequence of drinking the well water in those localities that were subject to surface drainage.

Its second appearance in an epidemic form in St. Louis (as you all know) was in 1866. I have not the statistics of the number of cases and deaths at its last visitation in St. Louis, but there were not as many, according to the number of inhabitants, as in 1849. But I believe we had more cases than there were in New York in the same years, 1866 and 1867.

According to the statistics of the Board of Health for New York and Brooklyn, they only had 1,909 cases of cholera in the year 1866; they do not give the number of deaths for that year. In 1867 they only had twenty-seven deaths from cholera. And I

think it can be attributed to the great vigilance of the Board of Health of New York, that it was prevented from making such ravages as in its former visitations in that city. Now, unless there is a new departure in the periodicity of epidemic cholera, we need not fear another visitation of it again until 1882 or 1883, and not then if there is a strict observance of sanitary laws and hygiene.

We stated in the former part of this paper, that there were great floods, converting immense tracts of land into swamps. And as the water subsided, the flooded districts were drained, foul vapors arose everywhere, from decomposing vegetable and animal matter, made more horrible and poisonous by the odor of putrefied corpses, the victims of floods, famines and earthquakes.

It is probable that the atmosphere thus contaminated, gave origin to the *Black Death*, whenever the organs of respiration came in contact with it. At a later period it was stated that its origin in several instances, was traced to the pilgrims, who visited the banks of the Ganges, in the observance of their religious rites.

And still later, the havoc committed by the epidemic at Alexandria, suggested official inquiries, and the President of the Board of Health addressed a communication on the subject to the Minister of Foreign Affairs. In this paper it is stated as the opinion, not only of the President himself, but of all the scientific and professional authorities in Egypt, that the poison is generated by crowds of pilgrims periodically visiting the holy places of Arabia. The pilgrims congregate at certain periods of the year, from all parts of the Mohamedan World, to the number of seven or eight hundred thousand.

It is ever a point of religion with them that no pilgrim should change his clothes during the whole time of his pilgrimage. Under these conditions they are huddled together in enormous crowds beneath the fiery sky of the desert. It is an indispensable incident of the ritual that each pilgrim should sacrifice at least one sheep, and the skin and offal of these countless victims are left to decompose under an Arabian sun. The result of all this is that thousands of pilgrims perish on the spot, leaving their bodies to be shuffled hastily under a coating of sand which the first sirocco will disperse; and their clothes to be packed up and carried off as relics to be distributed among their relations and countrymen. The Egyptian minister thinks that here is the seed-plot and hot-bed of cholera.

It will scarcely be questioned that epidemic cholera is a disease originating in a specific principle pervading the atmosphere; this, acting in combination with miasmata rising from the earth, creates a positive poison, and this is productive of the same results wherever it comes in contact with the vital organs.

But while it produces but one disease there are distinct stages of the same, the different stages, in some cases, being more or less

merged into one; but in nearly every instance the peculiarities of each are plainly observable. How this atmospheric poison originates, or in what manner it attacks the system, we can only venture to express our opinion. It may act indirectly through the nervous system, thence affecting the organs of sympathy and sensation. Some distinguished medical gentlemen contend that it enters through the medium of the lungs. The discussion of the subject must be, after all, a mere matter of speculation, as it is not known how it enters the system. Neither is the nature of the cholera-poison known. The fact, however, is well known that a malarious poison does exist, and that, combined with local causes, it operates with deadly power. By imprudence in living, fatigue, want of sleep, gorging the stomach with food, stimulating the brain with alcoholic drinks, giving way to fear, or, in fact, any irregularity having a tendency to derange the course of nature, the magazine is prepared with explosive material, only waiting the epidemic match to hurl its victims to destruction.

How shall we prevent epidemic cholera? In reference to this subject the first thing to be considered is the fact that cholera is dependent primarily on atmospheric conditions, and proximately on local conditions, impure air being the most conspicuous. The mysterious principle, whatever it may be, generated in the great crucible of nature—whether in the jungles of India, the simoons of Arabia, or the craters of Vesuvius—may be carried on the wings of the wind over the surface of the earth, without producing more than a slight disturbance of the functions of animal life, manifested in a tendency to disease of the bowels, and general depression of the vital powers. Another poisonous principle is generated in the laboratories of terrestrial filth. Every city and town sends up its deleterious gases, its disease-laden malaria, which combines with the poisonous principle with which the atmosphere is already impregnated, and thus a compound is generated, which may be the fatal cholera-poison.

Predisposition and susceptibility favor the operation of the prevailing cause, therefore sanitary measures should be promptly instituted for the thorough purification of these gas-generating foci all around us in full blast; from the offal in vacant lots; from the alleys reeking with pollution; from the gutters and back yards of tenement houses.

This is where sanitary labors should begin. Competent sanitarians in every community, great or small, should inspect this work.

Timely and thorough *cleansing* and *disinfecting* is what "stamp out" Asiatic or sporadic cholera, better than any other means yet known to civilization.—*St. Louis Med. and Surg. Journal.*

On the Mechanism of Production of Symptoms of Diseases of the Brain. By C. E. BROWN-SEQUARD, M.D., New York.

It is my intention, in this first or introductory paper on diseases of the brain, to glance over the whole field of symptomatology relating to that organ, with the purpose of showing that we must give up as absolutely false most of our generally or universally admitted notions as regards the physiology and semeiology of the brain, and that new views must replace these old and effete notions. The advance of our knowledge in the symptomatology and the therapeutics of brain disease has long enough been barred by the generally accepted theories, which, as I will try to show, are completely erroneous. There is no important progress possible in the study of that subject, either for practice or science, unless we draw back and enter an entirely new path.

Since I began to study medicine, in 1838, the subject of this paper has constantly attracted my attention, and I selected it as the theme of the six Gulstonian Lectures I had the honor to deliver, in 1861, at the Royal College of Physicians of London. Since the last date I have made much progress in collecting arguments against the old and generally admitted views, and in building up the new theories I have to establish.

In this first paper I will merely give an outline of the different elements of my subject, but I shall take them up individually afterwards and study them at full length in as many papers or in a complete work. This paper will be divided into four parts.

PART I.—VIEWS GENERALLY ADMITTED AS REGARDS THE ORIGIN OF SYMPTOMS OF BRAIN DISEASE.

I will first sum up briefly what is universally or generally admitted, and then give a short account of views which are accepted by a great many able men in this country and in Europe.

1. The nervous system is composed of two lateral halves, arranged so that the right side of the brain is the centre for the left side of the body, being for it the seat of the will and of the perception of sensations; while the left side of the brain is the centre for the right half of the body.

2. The conductors of the orders of the will to muscles coming from the brain, decussate, chiefly if not entirely, in the lower part of the medulla oblongata, so that those from the right half of the brain pass into the left side of the spinal cord, and *vice versa*.

3. The conductors of sensitive impressions from the whole right side of the body, in their way to the left side of the brain, and those from the left half of the body going to the right half of the brain, decussate, either entirely in the spinal cord and medulla oblongata, as I have tried to prove since 1849 (a view which I have

been compelled recently to modify notably), or in those parts and in the pons Varolii, as many physicians, not knowing my arguments, yet admit.

4. One of the lateral halves of the brain is the seat of the perception of visual sensations, either for the whole eye on the other side (according to one view), or for the external half of the one eye and the internal half of the other (according to Wollaston's theory).

5. The vaso-motor nerves arise chiefly, if not entirely, from the medulla oblongata (Moritz Schiff, C. Ludwig, Soboroff, and others). They decussate partly in the spinal cord, partly in the medulla oblongata (M. Schiff).

6. The respiratory movements depend on conductors arising from the medulla oblongata, and descending without decussation along the spinal cord.

7. Certain limited parts of the brain have certain kinds of functional activity, as, for instance, the left third frontal convolution and neighboring parts, which are said to be the seat of the faculty of expressing ideas by speech,—the tubercula quadrigemina, which are considered as the centres for visual sensations, etc.

8. Symptoms such as diminution of intelligence, and the various disorders of that faculty in insanity; aphasia; loss of power of voluntary movements; anæsthesia; loss of the higher senses, etc., *are due in a direct way* to those alterations of tissue in the places where we find organic disease in the brain after death. In other words, these symptoms are explained by the assertion, *that the part diseased* (either by pressure or otherwise) *has lost its function.*

9. Delirium, convulsions, and some other active manifestations in cases of disease of the brain, *are due also in a direct way* to the irritation of the part of that organ where an organic alteration is found after death. In other words, the symptoms are explained by the assertion, *that the part diseased has had its vital property or properties morbidly put in play.*

I consider as erroneous not only the above generally admitted views, but also many others less generally received, but maintained by many able physiologists and physicians. Among these last opinions the following deserve notice: 1st. Todd and Bowman, and after them W. B. Carpenter, Broadbent, and others, have considered the corpora striata as centres for the voluntary movements, and the optic thalami as centres for sensations; 2d. Broadbent, in an excellent paper,* has propounded the view that one of the corpora striata is sufficient to act on the muscles of the trunk, neck, and some other parts on the two sides, explaining in that way the numerous cases in which these muscles escape paralysis in diseases of the brain; 3d. Various hypotheses have recently been put for-

* The British and Foreign Medico-Chirurgical Review. London, April, 1866, p. 468 et seq.

ward by Broadbent, Meynert, and Luys, to explain the mechanism of action of the brain in health and disease. The views of Meynert are ably expressed in an article by one of his pupils, Dr. James J. Putnam, of Boston, in this No. of these Archives; 4th. The efforts made by Nothnagel, Wilks, Meynert, J. Hughlings Jackson, and others, to localize the central cause of epilepsy and epileptiform convulsions in certain parts of the brain; 5th. The efforts of Duckworth, J. H. Jackson, and others, to localize the central cause of chorea in the corpora striata or the optic thalami; 6th. The efforts of R. Dunn, W. B. Carpenter, Ph. Lussana,* J. Hughes Bennett and others, to localize the muscular sense in the cerebellum.

I will not say more now on the views propounded or held by the ablest physiologists and physicians of our times on the general pathology of the brain; I will show hereafter how erroneous or incomplete they are.

PART II.—VIEWS WHICH I CONSIDER AS WELL ESTABLISHED OR MOST PROBABLE AS REGARDS THE PHYSIOLOGY AND THE PHYSIOLOGICAL PATHOLOGY OF THE BRAIN.

I will simply say now, that the following points are already well established or extremely probable, and in perfect harmony with all the facts I know.

1. The brain is a completely double organ, each of the hemispheres being a whole brain in itself, not only for mental actions as ably maintained by Sir Henry Holland,† and by Dr. A. L. Wigan,‡ but also for every other function (volition, intellectual perception of sensations, etc.) known to belong to the various parts of the central mass of nervous tissue named encephalon.

2. Originally no marked difference exists between the right and the left hemispheres, each of them being in newly-born children almost as well able by natural development and future exercise to acquire all the functional powers of the brain; but as one of the two hemispheres, being sufficient for certain functions, is exercised more than the other, it comes to be much more apt than the other to execute these functions. This view, ably maintained by Dr. W. Moxon,§ and accepted by my eminent friend Dr. P. Broca, so far as the faculty of speech is concerned, is just as well grounded, as I will show hereafter, for the power of volition on the muscles, and for several other functions of the brain.

3. The communications between muscles and the brain as centres for volition take place in a normal state by two (if not more)

* Journal de la Physiologie de l'Homme, etc. Vol. v, 1862, p. 427.
† Chapters on Mental Physiology. London, 2d Ed., 1858, Chap. VII, p. 179.
‡ A New View of Insanity.—The Duality of the Mind. London, 1844, *passim*.
§ British and Foreign Medico-Chirurg. Review. London, April, 1866, p. 481.

distinct sets of conductors, one passing from a lateral half of the brain to the muscles of the corresponding side in the trunk and limbs, and remaining in all their length in the same side of the cerebro-spinal axis; the other set (or sets) decussating with the homologous set, coming from the other side of the brain, and going to the muscles of the trunk and limbs on the opposite side.

4. The decussation of the conductors serving to voluntary movements takes place not entirely or even chiefly where most physiologists and physicians (including myself, up to some time ago) believe it to occur, *i. e.*, in the lower and front part of the medulla oblongata; but all along the median plane of the cerebro-spinal centre, from the crura cerebri to the lumbar extremity of the spinal cord, including, of course, the pons Varolii and the medulla oblongata.

5. The transmission of sensitive impressions, coming from one of the lateral halves of the body, takes place also by at least two sets of conductors, one going up to the brain in a direct way, *i. e.*, remaining in the corresponding half of the spinal cord and of the brain, while the other passes into the other half of these nervous centres, decussating all along the spinal cord and medulla oblongata with the homologous conductors coming from the opposite side.

6. The decussation of these last conductors takes place, as I have tried to prove since 1849, along the median plane of the spinal cord for the trunk and limbs, and of the encephalon for the nerves of general and special sensibility arising from that part of the nervous centres.

7. Very few conductors, direct or decussating, are sufficient for complete communication between the brain and the spinal cord, for sensibility and voluntary movements. These communications take place not by mere prolongations of the nerve-fibres of the motor and sensitive roots of the spinal nerves, after they have reached the cells of the spinal cord, but by a very small number of conductors, going from groups of these last cells to groups of brain-cells.

8. The vaso-motor nerves arise from many parts of the nervous centres (including the ganglions of the sympathetic). The medulla oblongata is the principal place of their decussation. The pons Varolii is the chief centre from which they originate, either for the viscera* or for the trunk and limbs.

9. The respiratory movements have their centre in the spinal cord, the pons Varolii, and other parts of the encephalon, as well as in the medulla oblongata. Ganglions in the diaphragm participate in the production of these movements.†

10. Symptoms of diseases of the brain are of two distinct

* See my paper on Hemorrhages due to a nervous irritation, in this Journal, p. 148.

† See the January No. of this Journal, p. 97.

classes: those which arise from an influence exerted on distant parts by an irritation of the diseased part (indirect symptoms), and those produced in a direct way, either by the loss of function or the irritation of the part diseased. The first class will be observed in all cases of diseases of the brain which produce symptoms. This first class will co-exist with the second in most cases of disease of the base of the brain; but it exists alone in cases of disease located in the cerebral lobes, the cerebellum or its peduncles.

11. The indirect symptoms are of two kinds, both arising, however, from an influence exerted on distant parts by an irritation starting from the organic lesion that we may see after death. Of the first kind are those symptoms due to a paralyzing or inhibitory influence; and of the second kind are those in which, instead of a cessation of activity, there is on the contrary the manifestation of a morbid activity.

12. To the group of indirect (inhibitory or arrestatory) symptoms belong the various kinds of cessation of activity which I have to study in the paper now in course of publication in this Journal (see January No., p. 88), including the loss of voluntary movements, anæsthesia, amaurosis, aphasia, loss of consciousness, loss of the power of controlling the sphincters, etc. I will show in that paper that all these kinds of cessation of activity take place in the same way as the arrest of the heart when the par vagum is galvanized.

13. To the group of indirect production of a morbid activity belong delirium, convulsions, and other active disorders of muscular movements.

14. The mechanism of production of the indirect symptoms of an organic disease of the brain seems to be identical with that of the reflected symptoms due to the irritation of peripheric nerves in the bowels, the lungs, the skin, or in other parts of the trunk and limbs. To be more complete, I ought to say that many nerve-fibres, either in the mucous membranes, the skin, the viscera, the trunks of the various spinal or cranial nerves, the cerebral meninges, the ventricular membranes, and the different parts of the brain itself, seem to have similar properties, and to produce indirect symptoms under an influence exerted by their irritation on distant parts.

15. In the same way that an irritation of a peripheric nerve will sometimes produce no indirect symptom (*i. e.*, a symptom due to an influence exerted on distant parts), or will in other instances produce any one of the indirect symptoms (those of cessation of activity or those of production of a morbid activity), in that same way will a lesion of the brain, extensive or not, produce no indirect symptom, or engender any one of the many indirect symptoms.

16. The above being admitted, it is easy to understand all the

differences that may be found as regards symptoms of organic diseases of the brain. It is easy to understand how a paralysis can occur on the side of the brain lesion or on the opposite side; how a paralysis can appear suddenly and be complete although the lesion is small, and located in a part which cannot by any one be considered as the seat of the will, or containing the conductors for the voluntary movements of the part paralyzed; and how also a paralysis can disappear suddenly, although the brain lesion that gave rise to it still remains. It is easy to understand why there is no relation whatever between the extent, the kind, the seat and the rapidity of apparitions of an organic disease of, or an injury to, the brain, and the symptoms that may appear. I stop here, as I will have in the next part of this paper the opportunity to show that the old views are absolutely wrong, and that the theories I hold are in perfect harmony with the most important facts relating to the symptomatology of the organic affections of the brain.

In the next part of this paper I will also show that all the attempts heretofore made to localize certain functions or certain affections in special parts of the brain have, till now, been complete failures.

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[*Second Article.*]

In the first article on this subject I have given the views universally or generally admitted concerning the origin of symptoms of brain disease, and also the views that I hold. I will, in this second section of my paper, give, first, the reasons that have led me to reject the old theories relating to this subject and to adopt the new views I propose, and then I will study the various modes of production of symptoms of disease of the brain. But before entering into the discussion of these important topics there are two points of great interest on which I have to say a few words.

(A.) I think the following statements may help the reader to understand more fully, and much more easily, the new views I try to establish:—

1. If we compare the symptoms produced by an irritation, such for instance as that of one of the lungs, or of the part of the base of the brain where the trigeminal nerve is inserted on the pons Varolii, or of the cerebral meninges, with the symptoms caused by an irritation of any part of the brain, we find that in either of the groups of cases we compare there may be paralysis produced in the corresponding or on the opposite side of the body, and, besides that, almost any of the symptoms of disease of the brain. On the other hand we find also, and in many cases, that no symptom of brain disease will appear, notwithstanding an organic disease in the cerebral lobes, in the base of the brain, in the cerebral meninges, or in the lungs.

2. Led by facts like the above, and by many others, I have necessarily come to the conclusion that there are nervous elements in the various parts of the cerebral lobes, in the corpora striata and optic thalami, in the crura cerebri and other parts of the base of the encephalon, which, like the nervous elements of the cerebral meninges, of the various viscera, the skin, the mucous membranes, the trunks of nerves, etc., have, when irritated, the power of producing on some part of the nervous centres—either at a short or at a very great distance from the seat of the irritation—changes in the normal state of activity of that part.

3. These changes may consist: *a*, in a *cessation of activity*, showing itself according to the part so affected by aphasia, agraphia, amnesia, paralysis, anæsthesia, amaurosis, anosmia, deafness, loss of taste, cardiac syncope, arrest of breathing, or a suspension of the interchange between tissues and blood; *b*, in the manifestation in a morbid form of the activity of certain parts of the nervous centres, producing delirium, convulsions, the so-called referred sensations, alterations of nutrition, etc.

4. In cases of alteration of the blood there is undoubtedly an influence of some poison on many parts of the brain and spinal cord, but there is also sometimes an irritation upon certain limited parts of the encephalon, propagated from them to other parts, just as in the case of a local organic disease, or just as in the case of an affection of the bowels, the lungs, the cerebral meninges, etc.*

5. From all the above statements, and from the study of every symptom of brain disease, I have drawn the conclusion that all the parts of the brain resemble the peripheric parts of the nervous system, in being able, under irritation, to act on any other of its parts, modifying their activity, so as to destroy, or diminish, or to increase and to morbidly alter it.

(B.) Independently of the old views which I criticise, and of the new views I try to establish, there are several well-demonstrated ways of explaining the production of symptoms in certain cases of brain disease. I will only say a few words about them here.

1. There is no doubt that alterations in the quantity or quality of the blood may cause symptoms of disease of the brain. I hardly need to name anæmia, congestion, the various kinds of toxæmia (uræmia, cholesteremia, oxaluria, etc.), among causes acting sometimes or generally on the whole mass of the brain. But local anæmia, local congestion, embolism, thrombosis (in an artery or a vein) act exactly like a wound, a hemorrhage, a tumor, as regards the mechanism of production of symptoms; and the criticism of the old views I will enter into hereafter, applies as well

* See the curious cases of *loss of speech caused by the bites of venomous snakes*, by Dr. William Ogle, in St. George's Hospital Reports, London. Vol. iii, 1868, p. 167.

to local changes in the amount of blood in the encephalon as to any local organic affection of that nervous centre.

2. A general pressure can, of course, destroy in a direct way the functions of the brain, but what I have just said about the amount of blood applies also to pressure. When it is localized it produces symptoms not according to the teachings of the old theories, but by the mechanism which I have pointed out for local organic affections of the brain.

3. There is no doubt that a considerable alteration of the whole extent of the cortical parts of the brain will affect the mental faculties in a direct way, *i. e.*, as taught by the old theories.

4. A propagation of organic alterations from the seat of an original lesion in the brain can, of course, give rise to symptoms. But we cannot explain the appearance of symptoms in that way in most cases of hemorrhage, of wound, or of softening of the brain, as it requires more time for the propagation of a morbid state to distant parts of the brain than there is between the moment the lesion takes place and of that apparition of symptoms. Even in cases of tumors enlarging slowly, we cannot look upon such a propagation as the essential cause of appearance of symptoms, as there are many cases of tumors in which there is no such propagation of a morbid state. R. B. Todd* considered that, when the surface of the brain was diseased, symptoms appeared only after the propagation by the cellular-tissue to the base of that organ. He only made a supposition that it was so. There are positive facts showing that a sudden lesion of the surface of the brain may at once cause symptoms (paralysis, loss of one or more senses, or convulsions, as well as mental disturbances). Then, of course, the symptoms cannot be due to an organic change extending to the base of the brain.

Another kind of propagation first discovered by L. Turck—studied since with great care by Prof. Charcot, by Bouchard, and others—consists in a peculiar degeneration, which progresses from the seat of a lesion in the corpus striatum or its neighborhood, down to the medulla oblongata on the same side, affecting in this last nervous centre the anterior pyramid, and with it passing into the lateral column on the other side of the spinal cord. Charcot and Bouchard have shown that even the nerves on the opposite side to that of the lesion in the brain may be degenerated. No doubt that in such cases the descending alteration must participate in the production of symptoms; but in these cases, also, the symptoms of brain disease appearing at once after a lesion of the encephalon cannot be due to this secondary alteration.

5. Two very able physicians, Prof. Vulpian† and Dr. Clifford

* Clinical Lectures on Paralysis, Disease of the Brain, etc. London, 1854, p. 49.

† Comptes Rendus de la Societe de Biologie, 1861, p. 38.

Allbutt, have had the idea that certain symptoms of brain disease may be due to an influence exerted by the diseased part of the encephalon on the secreting membrane of the lateral ventricles, producing an effusion of serosity. I will merely say, that although I agree with them in looking on such an influence as able to produce sometimes that effusion, there are two decisive reasons against giving to such a cause a great power. In the first place, we not rarely find a good deal of serosity in one or in both lateral ventricles without any symptoms; and in the second place, there are a great many cases of disease of those parts of the encephalon pointed out, by Prof. Vulpian and Dr. C. Allbutt, with such symptoms as they mention (amaurosis, paralysis on the side of the brain lesion, etc.), without any increase of the ventricular fluid.

PART III.—SIGNIFICANCE OF THE GENERAL SYMPTOMATOLOGY OF BRAIN LESIONS.

Under this title I only intend to give a brief outline of the semeiology of the brain, with the double purpose of showing how completely it disagrees with the old or generally admitted views, and how much also it agrees with the new views mentioned in the preceding part of this paper. What I have to say on this subject, I will condense in a number of propositions, the demonstration of which I will try to give.

PROPOSITION I.—*Lesions of a very small part of the brain often produce very marked symptoms.*—It is well known that lesions, limited to only a small part of the brain, will frequently produce symptoms. It would be easy to show that there is not one single small part, not only of the base of the brain, but of the three cerebral lobes—of their white or of their gray matter—which, being the seat of a lesion (hemorrhage, softening, or any other), has not sometimes produced marked symptoms, and, among others, paralysis. It is evident that the old theory of production of symptoms of brain disease is absolutely unable to explain such facts. The only way to get out of the difficulty is to suppose that the autopsy has not been well made, and that a lesion, not discovered, existed somewhere else than the one found, and that this supposed lesion was the cause of the symptoms. It is, of course, quite possible, if not certain, that real organic lesions have frequently escaped notice; but it would be a purely gratuitous supposition to admit that it always has been so in the very large number of cases in which only a small lesion has been found in the cerebral lobes in the bodies of persons who had had decided symptoms of brain disease. If we take the view I hold, that nerve-cells or nerve-fibres, or both, in the brain-tissue, like nerves of the bowels or other peripheric parts, possess, when irritated, the power to act on more or less distant parts of the nervous centres, and either mor-

bidly put in play their vital properties, or stop or alter their functions, there is no difficulty to understand that any symptom of brain disease may arise from a lesion of a single circonvolution, or any other small part of the brain. As regards these two great points, *i. e.*, the lack of symptoms or the production of either one or another of the symptoms of brain disease, the history of cases of organic cerebral affections is similar to that of cases of worms in the bowels.

PROP. II.—*Extensive lesions may exist in the brain without marked symptoms.*—On the one hand, as above stated, a trifling lesion can produce decided symptoms, while on the other, extensive lesions may either exist without symptoms or produce only trifling effects. I will only mention here a few of such cases, and, in a special paper on this point, I will show that there is no part of the brain which has not sometimes been considerably altered or destroyed without the appearance of symptoms. Even the medulla oblongata, the pons Varolii, the crura cerebri, the corpora striata, the optic thalami, and the third left frontal convolution, have been found diseased in cases in which the symptoms (such as paralysis, anæsthesia, or aphasia), which ought to have shown themselves, had not, however, appeared.

Let us only study a few facts. Abercrombie,* whose accuracy cannot be denied, relates a case in which neither aphasia nor paralysis had existed, although almost the whole of the *left* hemisphere was considerably altered or destroyed. Here are his own words: "The brain externally appeared healthy; but when a thin section was cut from the upper part of the *left* hemisphere, a cavity was exposed, through which a probe passed in every direction without any resistance, through nearly the whole extent of the hemisphere. This arose from the whole hemisphere being in such a remarkable state of decomposition, or softening, that it formed one great cyst, full of soft, pultaceous matter, inclosed in a very thin covering, formed by the healthy cerebral matter on the surface. The healthy portion forming this covering in many places did not exceed a quarter of an inch in thickness, and at the thickest parts, which were on the upper surface of the brain, did not exceed one-half or three-fourths of an inch. The contained matter was a thin, soft pulp, mixed with portions of a pellucid, albuminous substance, which coagulated when thrown into boiling water. This matter was chiefly in irregular masses, but there were some finer portions of it which could be separated in the form of distinct round nodules, resembling hydatids. They were, however, only uniform masses of albuminous matter in a more concrete state. On the external part of the hemisphere, lying over the

* Pathol. and Practical Researches on Diseases of the Brain, etc. Edinburgh. 4th Edition, 1845. Pp. 176—178.

petrous portion of the temporal bone, there was a tumor the size of a pigeon's egg. The left ventricle was entire; it contained a small quantity of serous fluid, and was separated from the diseased mass by a very thin septum. The *left* hemisphere had been considerably enlarged, and the right diminished in the same proportion, the falx being sensibly pressed towards the right side."

In this decisive case all communication between the base of the brain and what remained of the superficial parts of the brain was cut off, and still there was no aphasia, no paralysis, no anæsthesia. For many years the brain had been diseased, as evidenced by various symptoms which had appeared and ceased (attacks of giddiness, of general rigidity, vomiting, amaurosis of the *left* eye, etc.). The patient was found dead one morning, after having been so well that she had spent the preceding evening with a party in the house of a friend.

As regards the part of the brain above the lateral ventricle, I will only mention one more case. It was observed by one of the ablest of the living surgeons of Paris, Prof. Richet. It is in some respects more important than Abercrombie's case. In another paper I will give it entirely. I will now simply say that an abscess of from 200 to 300 grammes (from seven to ten ounces) of greenish or milky pus had destroyed the middle lobe almost entirely, and a good part of the posterior lobe of the right hemisphere, and that the right lateral ventricle was filled with pus, and the right optic thalamus and corpus striatum were partly destroyed. Death occurred suddenly: the patient had had no paralysis, no anæsthesia, no convulsions, no intellectual deficiency.* For cases analogous to that one, I will refer to an excellent paper of my able friend, Dr. J. B. S. Jackson,† and to Dr. R. Bright's great clinical work.‡ In another paper, the publication of which I began in a preceding number of this Journal, on new kinds of hemiplegia, I gave several cases showing that a lesion of the base of the brain, instead of producing the ordinary crossed paralysis, may cause palsy in parts of the trunk and limbs where this loss of motor power should not be, according to the generally admitted theories.

I will only add that the medulla oblongata, the part of the nervous centres which is by far more able than any other to cause sudden death, when suddenly injured (and even very slightly sometimes), is also a part which can bear the greatest alteration without paralysis or anæsthesia in limbs.

PROP. III.—*There is no relation whatever between the extent of a lesion in the brain and the production of symptoms.*—On the one hand,

* See Alphonse Champsaur's thesis: De l'affection tuberculeuse du rocher. Paris, 1862, p. 30.

† See Boston Medical Journal, Vol. lxii, May, 1860, p. 353 et seq.

‡ Reports of Medical Cases. London, 1831, Vol. ii, pp. 151—165.

if we consider what has been said above, trifling lesions can produce decided symptoms; and, on the other hand, most extensive lesions, never mind where located, may produce neither paralysis nor anæsthesia, nor intellectual disturbances (aphasia, insanity, etc.). This can be expressed in other and perhaps more forcible words: *There is no relation whatever between the extent of a lesion in the brain and the symptoms that may be caused by it.* If symptoms were due, as is admitted, to the loss of function of the part altered or destroyed in the brain, or to *immediate* effects of the irritation of such a part, there would be a constant relation between them and the disease, so that the intensity and extent of the symptoms would be in proportion with the intensity and extent of the alteration.

PROP. IV.—*Symptoms of brain disease may exist without the least visible organic alteration of the brain.*—That paralysis, anæsthesia, or any other symptoms of disease of the brain may appear when that organ is without any organic disease, is a well-known fact, grounded on many cases in which a sudden or rapid cure was obtained after the cessation of a peripheric cause of irritation (the expulsion of worms, for instance), or in cases in which the autopsy has shown no alteration in the tissue of the brain. With the views I hold, this can be explained easily: the two kinds of symptoms (those of cessation of activity, *i. e.*, the inhibitory or paralyzing, etc., as well as those of irritation manifested by the morbid actions of parts of the brain (such as delirium, convulsions, etc.),—the passive and the active symptoms are due to the influence exerted by an irritation starting from a diseased organ upon certain parts of the brain, causing in some of them a cessation of activity, and in others, producing, on the contrary, a manifestation of activity.

The mechanism of production of symptoms of brain disease, as I have already said, and as I will, I hope, succeed to show in a special paper, is identically the same, whether the cause is in the bowels, or in any thoracic or abdominal viscus, or in the meninges of the brain, or in any part of the brain itself. The symptoms are not the *immediate* or *direct* effects of either the cessation of function or a morbid action of the part diseased. Wherever is the lesion which is the prime mover in the causation of symptoms, it entirely or at least partially produces them *mediately* or *secondarily*, or *indirectly*, and through the agency of an irritation starting from the seat of the lesion and acting on other parts which in a direct way give rise to the morbid manifestations.

PROP. V.—*The symptoms of brain disease may cease at the approach of death.*—This fact, which has attracted the attention of many able men, among others, Sir Henry Halford,* Guislain,† and Dr.

* Essays and orations read and delivered at the College of Physicians. 3d Edit. London. 1842. Pp. 17—20.

† Traite des Phrenopathies. 2d Ed., Bruxelles, 1835, p. 61.

R. La Roche,* cannot be explained by the generally admitted theory, while it is in perfect accord with my views. Not only just before death, but sometimes a little while before, symptoms of disease of the brain, depending on an organic disease of that nervous centre, will disappear more or less suddenly and completely. Admitting that they were produced indirectly, or mediately, or secondarily, and through the agency of an irritation starting from the seat of the lesion and acting on other parts, either to stop action or to generate it, we can easily understand that if the vital properties of the various parts of the brain (the part which is the seat of the lesion visible after death and also those parts acted on secondarily) are diminished in power from the diminution of circulation and hematosis which precedes death, it is natural that a cessation of the morbid manifestation of these properties should occur.

PROP. VI.—*A lesion of the brain can produce a cessation of symptoms of brain disease.*—There are facts on record showing that symptoms of brain disease may disappear after a considerable lesion of the brain. Thus in a case of insanity and epilepsy there was almost a complete cure after a fracture of the cranium and the issue of a notable quantity of brain tissue.† In another case there was improvement of the mental power after a lesion of the right side of the brain.‡ I know a case of a very intelligent gentleman, son of a most eminent statesman, who was naturally very reticent and who disliked to talk. After a fracture of the cranium just below the level of the left third frontal convolution, instead of losing speech, he came to be very fond of talking. Leaving this last case aside, the others, at any rate, cannot be explained by the generally admitted views, while they can easily be understood if we adopt the views I hold.

PROP. VII.—*An immense variety of symptoms in different individuals may be caused by a lesion in one and the same part of the brain.*—Symptoms of brain disease vary immensely, not only in intensity as stated already, but also in their kind, although the lesion producing them occupies the same place. This we witness most frequently. All the forms of convulsive affections, chorea, catalepsy, epilepsy, etc., all the varieties of mental disorder, all the differences in degree and location of paralysis, of anæsthesia and the various alterations of the senses, etc., have been observed in cases of disease of any one of the various parts of the base of the brain, and most of these symptoms have been observed in cases of disease of either the anterior, the middle, or the posterior lobes

* Journal of Psychological Medicine. New York. Vol. iii, p. 119 et seq.
† Gazette Medicale de Paris. 1844, p. 76; and another case, 1832, p. 95.
‡ Journal des Progres des Sciences et des Inst. Medec. Paris. Vol. xvii, p. 252.

of the brain. Are we to admit that each part of the brain possesses all the properties (normal or morbid) and all the functions of that great nervous centre? But if so, as we see that in some individuals there is no symptom at all, in others one symptom or another, we should have to conclude that one and the same part of the brain in some individuals is endowed with certain properties and functions, while in others it possesses entirely different properties and functions, and in others again, it does not seem to possess either a property or a function. The only rational explanation is, that in the same way that an irritation of any peripheric nerve* may either be insufficient to produce a remote effect, or quite able, on the contrary, to produce the most varied effects, a disease in any part of the brain may also be the starting-point of either an inefficient irritation or act, by means of that irritation on distant parts, and produce through them either kind of symptoms.

PROP. VIII.—*The same symptom may originate from the most various lesions.*—As regards the kind of lesions as well as concerning their extent and location, the most various organic alterations may produce the same symptom. Here, also, we can ask therefore: Are we to suppose that each part of the brain is endowed with the same vital properties and functions as all the others, and still more, as we know that what takes place for one symptom occurs also for every other, are we to suppose that every part of the brain can and does possess every property and every function of the whole brain? Or, are we to admit that in one individual a certain property or a certain function belongs to one part, in another individual to another part, and so on in as many individuals, to as many parts of the brain which produce the same symptom when organically altered?

Of course these suppositions are absurd, and as the old theories I am trying to prove false, could not, without the admission of these hypotheses, explain the fact that a lesion anywhere in the brain can produce the same symptom, we must give up these old theories. On the other hand, if we take up the view I hold, that symptoms in organic diseases of the brain arise in the same way as in cases of peripheric irritation (in the bowels, the lungs, etc.), we can easily understand that the irritation, starting from the place where we find disease after death, can go to any other part or set of parts of the nervous centres and produce the symptom that appears. Take amaurosis, for instance, and we find that it can be produced either in one or in both eyes, whatever be the seat or the kind of a lesion in the cerebral lobes, in the base of the brain, or in the cerebellum. If symptoms arose according to the old theories, we would have to place the centre for visual perceptions

* See my article on the remote consequences of nerve-lesions, in Holmes' System of Surgery. London. 1870. Vol. iv, p. 184.

everywhere. This is, of course, inacceptable, while if we admit that there are nervous elements, in the various parts of the encephalon, endowed—in different degrees in different individuals—with the power of arresting the activity of either the nerve-cells of the retina or of those which constitute the centre for visual perceptions, we can easily understand how, according to the degree of that power, there is or there is not, under the irritation caused by disease, amaurosis of one eye or both eyes, just as we see this deficiency of the sense of sight either in the two eyes or in one in cases of irritation of the bowels by worms.

PROP. IX.—*A lesion of the same kind and extent on the two sides of the middle line of the brain may produce symptoms only in one-half of the body.*—This is a most powerful argument against the old views I am criticising. There are a number of such cases on record. Abercrombie (*Loco cit*, p. 103) gives the case of a child, 16 months old, who had hemiplegia of the right arm and leg, and in whose brain there were, apparently, equal lesions on the two sides: several ounces of fluid in the ventricles and an abscess in the substance of the medulla oblongata which appeared to occupy "its whole diameter," where it is crossed by the pons Varolii. Huguier has reported a case of a tubercle, the size of a walnut, imbedded in the pons Varolii, appearing to extend as much on one as on the other side of the middle line, and having produced paralysis on the right side only (*Bulletins de la Societe Anatomique*, pp. 52–53, vol. iv, 1829). Proust relates a case of hemiplegia of the left side of the face and limbs, caused by syphilitic tumors placed over the middle line opposite the chiasma of the optic nerves.—(*Medecine eclairee par l'ouverture des Corps.* Paris, 1804, vol. ii, p. 59.)

I could relate several other well-observed cases, among others one of Abercrombie (p. 101), in which there was an abscess in each of the corpora striata with anæsthesia in only one side of the body; and another of Poisson, in which there was facial paralysis on one side, from a lesion of the pons Varolii by effused blood in the 4th ventricle (*Bull. de la Soc. Anat.*, 1855, vol. xxx, p. 204), but I think these facts are sufficient to show how untenable is the old view that paralysis, in organic affections of the brain, is due to the loss of function of the part altered. Here we see the same extent and kind of alterations in corresponding parts on the two sides of the middle line, in organs which are considered as containing the conductors for voluntary movements, and instead of the same amount of paralysis in the two sides of the body, we find hemiplegia. If we admit the view I hold, that the paralysis depends on the inhibitory or arresting influence exerted on other parts by an irritation starting from the seat of the lesion, it is easy to explain how there can be paralysis on one side only. As we know that irritations vary considerably in their power in different individuals,

and in the same individual at different times, or in different parts of the body, or, besides, in corresponding parts of the two sides, we can easily understand that one side of the brain in the same individual will react powerfully under irritation, while the corresponding or rather the homologous parts on the other side will not react. Such a thing is not very frequent; but after all, if we consider that the nervous centres are double organs, a difference in the intensity of the excitability of one side, compared with that of the other side, is not more wonderful than the difference of the excitability of parts of the nervous system of one man compared with that of similar parts in another man.

PROP. X.—*Symptoms may appear indicating the existence of two lesions in the brain while only one exists.*—This has less value than the preceding proposition against the old view, because it can be said that another lesion existed which was not found. Still there are cases in which the nature of the lesion and the short duration of life after it had occurred, together with the known accuracy of the observer, leave very little doubt, if any, that symptoms which, according to the old theories, could only be produced by two distinct lesions, have been caused by one alone. In a case recorded by one of the late Presidents of the Royal College of Physicians of London, Dr. Thomas Mayo (*London Medical Gazette*, p. 16, vol. xxxix, 1847), a woman was stricken down by an effusion of blood in the *right* corpus striatum, and the autopsy showed no other lesion in the brain. The symptoms were: paralysis of the *left* limbs and of the *right* side of the face. My able friend, Dr. John W. Ogle, has seen just a similar case. The old theories cannot explain such cases except in admitting that although there was no lesion found elsewhere than in the right corpus striatum, there was one unseen causing the facial paralysis. If we admit my views, that paralysis in the face or limbs depend not on the loss of function of the part altered, but on an irritation of that part, and that an irritation on any part of the brain can produce paralysis either on the same side or the other, these cases can easily be explained. The patients in both of these cases had had an inhibitory arrest of the nerve-cells serving to the motion of the face on the side from which the irritation started, and an inhibitory arrest of the nerve-cells serving to the motion of the limbs on the other side.

PROP. XI.—*The two sides of the brain in adults react quite differently one from the other under the influence of irritations.*—This is in absolute opposition to the old theories about the physiology and symptomatology of the brain. As I will soon publish a special paper on this subject, I will only give now some of the conclusions arrived at by others or myself.

I will first speak of the left half of the brain, or rather, as it should be called, the left brain. I hardly need to say that aphasia

and agraphia belong chiefly to the semeiology of the left brain. It is to Dr. Dax, Sr., that is due the merit of the discovery of this difference between the two brains,—the first difference pointed out between these two organs. But Dax committed the fault to consider this difference as absolutely constant. It is not so, as there are already on record (according to my own limited knowledge) more than thirteen cases of aphasia due to disease of the right brain with hemiplegia of the left limbs, and in one, at least, of these thirteen cases the patient was not left-handed.

Another symptom belongs also chiefly to the left brain: it is that a difficulty of articulation, or, in other words, a mechanical impairment of speech exists more frequently in affections of the left than in those of the right brain. This, to my surprise, although quite evident, has not been pointed out by any one except my former assistant, who has now risen so high, Dr. J. Hughlings Jackson.—(*London Hospital Reports*, Vol. ii, 1866, pp. 314–15.)

A third symptom belongs also more frequently to alterations of the left brain than to those of the right; it is insanity in its various forms. Acute delirium, however, seems to be more frequent in cases of disease of the right brain than in cases of disease of the left.

The right brain differs considerably from the left, not only by its being less frequently the cause of the three above-mentioned symptoms, but by its being more frequently diseased when the following symptoms exist:

1. Hysterical symptoms appear by far more frequently in the left than in the right limbs, which implies that when the brain is at fault in hysteria, the principal seat of trouble is in the right hemisphere. Canstatt and others had already pointed out that hyperæsthesia and spasm are more frequent in the right limbs, and anæsthesia and paralysis in the left limbs. It is known, also, that the pain under the breast exists oftener on the left than on the right side. Taking together the cases of unilateral paralysis in hysterical patients, mentioned by Macario, Briquet and De Fleury, besides the cases I have observed, I find that out of 121 cases, the left limbs were paralyzed in 97 cases and the right ones in 24 only. Two other very frequent differences exist in hysterical patients: there is a much greater frequency and a greater degree of tactile anæsthesia, with diminution of temperature due to spasm of blood-vessels, in the left than in the right limbs, particularly the hand.

2. Alterations of nutrition in paralyzed limbs are more frequent in cases of disease of the right than in cases of disease of the left brain. I have found that it is so for the so-called bed-sores and œdema. Out of 16 cases of bed-sores limited to one side, in the excellent paper of my friend, Prof. Charcot, proving that disease in one side of the brain produces sloughing in the opposite side of the body (*Archives de Physiol.*, Vol. i, 1868, p. 308), I find that the brain lesion was in the right side in 11 cases, and in the left in 5

cases only. I find that out of 19 cases of bed-sores mentioned by R. Bright, Andral, Abercrombie, and Lallemand, 13 existed when the lesion was in the right brain, and 6 when it existed in the left brain. Adding these facts to those of Charcot, we have 35 cases, in which 24 times the disease was in the right brain, while only 11 times it was in the left.

The alteration of nutrition in the ear of patients attacked with general palsy, is much more frequent in the left than in the right ear. (Petit, in *Journal de la Sect. de Medec. de la Loire Infer.*, Nos. 178–9. 1858, p. 299).

Optic neuritis, producing amaurosis, as my friend Dr. J. Hughlings Jackson has first ascertained, depends more often on disease of the right hemisphere than on disease of the left. (*Lond. Hosp. Rep.* 11, 1865, p. 316.)

Disease (hemorrhage, congestion, inflammation) of one or both lungs, due to disease in the encephalon, is more frequently found when the lesion is in the right than when it is in the left brain. Experiments on animals have shown this to me as well as clinical facts observed in man.

3. The convulsions of the muscles of the eye which constitute what Prof. Vulpian and Dr. Prevost have called the *conjugated deviation of the eyes* in organic brain affections, show that the right brain has much more power in producing that spasm than the left one. Adding a number of cases to those published by Dr. Prevost (*De la deviation conjuguee des yeux*, etc. Paris, 1868. *Passim*), I find that in 69 cases in which the convulsion was recorded by several authors or observed by myself, 47 times the lesion was in the right brain and 22 times only in the left.

I called attention long ago, in several lectures, to the greater frequency of general or unilateral convulsions in cases of lesions of the right brain than in those of the left. In very able papers of M. G. W. Callender (*St. Barthol.'s Hosp. Reports*, Vol. iii, 1867, p. 415, and Vol. v, 1869, p. 3, and *Med.-Chir. Transact.*, 1871, Vol. liv, p. 129,) I find that, without knowing my views, he has come to the same conclusions. As I will soon publish a paper on the subject of convulsions allied to or caused by diseases of the brain, I will only say here that, besides the general conclusion that diseases of the right hemisphere produce convulsions by far more frequently than diseases of the left one, I have ascertained the following interesting points: 1st, that diseases of the left brain, producing unilaterial convulsions, will very rarely indeed (in one out of ten cases) cause them in the same side; 2d, that diseases of the right brain, producing unilaterial convulsions, will, on the contrary, frequently cause them in the corresponding side (in more than one-third of the cases). So that taking together the cases of disease of the right or the left brain, unilateral convulsions have a greater tendency to occur in the right than in the left limbs.

4. We owe to Mr. Callender (*St. Barthol.'s Hosp. Rep.*, Vol. v, 1869, p. 24,) some remarks on the greater rapidity of death after apoplexy of the right hemisphere, as compared with that of the left. I have ascertained that his conclusion is borne out by the comparison of a great many more facts than those he has studied. I have also found that in softening of the brain by embolism, a similar result is obtained when we compare the right with the left brain. In 44 cases of embolism of the left cerebral arteries, the duration of life gives a total of 28,540 hours, which, divided by 44, gives an average duration of 648½ hours; while in 26 cases of embolism of the right cerebral arteries, the total being 13,110, the average duration has been 503⅝ hours.

Besides, I have made most careful experiments on a very large number of guinea-pigs, and obtained from injuries to one or the other of the hemispheres the following results: Out of 62 animals wounded in the right half of the head and brain, 14 only survived, *i. e.*, not one-fourth; while out of 34 with similar injuries to the left side, 19 survived, *i. e.*, more than one-half. To express myself perhaps in a more striking manner, death occurred after an injury to the right side in more than three-fourths of the animals, while it occurred in less than one-half of those whose left side was injured. I have unfortunately no exact record of the duration of life, but there is no doubt that this duration among the animals that died, was notably less for those operated on the right side than for the others. As much as possible the injuries were alike in the two sets of comparative experiments, and if there was a difference, it was that the right brain had been, perhaps, less injured than the left.

5. A very singular fact, pointed out long ago by Bayle and by Dechambre (*Bulletin Clinique*, Paris, 1835, p. 116), I have ascertained to be borne out by a great many cases of hemiplegia. It is, that when the unilateral paralysis is on the side of the lesion in the brain, it is almost always in the right hemisphere that this lesion is, or in other words, the right brain has much more power than the left to produce paralysis in the corresponding side of the body.

6. Another point of interest on this subject is, that the right brain is more capable than the left to produce also paralysis in the opposite side of the body. The frequency, the intensity and duration of hemiplegia are greater in the left limbs than in the right ones in cases of diseases of the opposite side of the encephalon.

7. A greater tendency to atrophy in cases of dementia exists for the right cerebral hemisphere than for the left, as shown by Baillarger, (*Annales Medico-Psychologiques*, 1858, Vol. iv, p. 168). Owing to that cause, left hemiplegia is more common than right side paralysis among the demented. The results obtained by

Baume (*Ann. Med. Psychol.*, 1862, p. 543), do not affect this conclusion (although they may seem to), because Baume has mixed up cases of hemorrhage and other morbid states with cases of atrophy.

I hardly need to say that all these facts, showing how different the symptomatology of the right brain is from that of the left brain, are absolutely irreconcilable with the old theories regarding the physiological and morbid actions and properties of the two sides of the brain. On the contrary, the views I hold are perfectly able to explain these facts. I will return to this subject in a special paper.

PROP. XII.—*In the same patient, with a persistent organic alteration of the brain, the symptoms may vary considerably from day to day.*—This variability is very often forcibly brought to the attention of medical men. Remarkable cases have been published by Casimir Broussais, Guislain, Abercrombie, Bright, Andral, and others. I will elsewhere give some of these cases. Such facts are usually explained by supposing that a congestion appears and disappears round the seat of the lesion. This supposition I will not deny *in toto*, as I admit the probability that such variable congestions have a good share in the causation of the symptoms. But can the old theories explain that a congestion (as was observed in a great many cases) seated in one limited part of the brain will produce alternately one set of symptoms and then another? Certainly not, while there is nothing contrary to the view I hold in the variability of symptoms from the same apparent cause. We know that a peripheric irritation may produce alternately various effects, and if we consider organic lesions of the brain as acting by a similar mechanism, it is quite natural that there be sometimes an alteration of effects.—*Archives of Scientific and Prac. Med.*

(TO BE CONCLUDED.)

On Chronic Poisoning with Chloral Hydrate. By DR. LUDWIG KIRN. (From the Allgem. Zeitsch. fur Psychiatrie.) Translated and condensed by the Editor of *The Practitioner*.

The immense literature of chloral hydrate, which represents, however, but a fraction of the cases actually observed, affords many references to acute poisoning, involving the greatest danger to life, or ending fatally in spite of remedies. Cases of the latter kind have appeared, especially in the English journals, with a truly fearful frequency.

Much fewer are the published observations on the changes

which the long-continued use of chloral hydrate produces in the organism. If some observers have failed to recognize any such changes even after long administration, it should be remembered that not only are the slighter disturbances liable to be overlooked, but especially that, from the experience of ourselves and others, the individual tolerance of patients for chloral varies within very wide limits.

We administered chloral hydrate, for the most part, once daily, as a hypnotic, in the dose of 30 to 60 grains, or occasionally 75 to 90 grains; with our present experience we should now rarely go beyond the dose of 30 grains. In particular cases we gave, besides the evening dose, one or two others in the day, to calm excitement. Our early experiments having warned us against the hypodermic use of chloral, it was afterwards always given by the mouth (or else by the rectum, with similar effects).

The calming and hypnotic action of the drug in cerebral and nervous disorders proved to be exceedingly variable; whilst with many the commencing dose of 30 grains continued for a long time to produce the desired effect, and in others only a quite gradual increase of this quantity was needed, in other patients there was but slight result, although the dose was quickly increased to 60; and in one case no sleep was obtained, although the amount was rapidly raised to 90 grains. In many patients, under apparently similar external conditions, the same quantity would sometimes succeed and sometimes fail. We shall here only concern ourselves with a series of morbid phenomena which appeared sooner or later in the course of a continuous employment of this hypnotic, collating these with the experiences of others.

The most prominent of the symptoms were those connected with the skin; their production for the most part depended on the cutaneous vaso-motor nerves. They were more or less extensive erythemas, and pustular or papular exanthemata.

The clinical observations of Schule* on chloral erythema must here take the first place. "The use of chloral produces a tendency to fluxionary hyperæmias, with increased and strengthened heart-action. This is first and most considerably manifested in the head, the vessels being dilated, and an intense erythema occurring, at first in spots, but afterwards more diffusely. In the more pronounced forms the erythema extends downwards to the trunk, and becomes general, in which case it seems to follow, by preference, the course of the larger nerve-trunks. This chloral-rash remains latent until it is set going by some stimulus to the vascular system, but then appears in an intensity and rapidity which are proportioned to the existing current of (general) chloralization."

* Ueber eine bemerkenswerthe Wirkung des Chloral-Hydrats. Allgem. Zeitsch. fur Psych. xxviii. 8.

I reproduce these results of Schule's verbally, because I can entirely confirm them. Although, from the varying chloral idiosyncrasies of individuals, they are not always observed, the statement is true for a great number of cases, and I have at this moment a series of patients under my eyes in whom the chloral-rash can be produced with the certainty of an experiment. For instance, in a paralyzed patient, who took 30 grains of chloral every night, ten minutes after she had drunk her beer, there occurred increased action of the heart and spots of roseola upon the forehead, nose, cheeks, and neck, which quickly coalesced into a patchy erythema, with swelling and heat of the affected parts, which symptoms disappeared in about an hour. Still more strongly appeared the same symptoms in a young and previously healthy woman, affected with mania, who every night took 30 to 45 grains of chloral (although she had not previously suffered from congestion of the face). As soon as she took a glass of beer there was strong pulsation of the arteries, and the whole face was swollen and of such an alarmingly deep color that we were obliged to forbid the use of wine and beer. At present we but rarely allow alcoholic drinks to patients who are being treated with chloral. In another young woman suffering from mania, who took 30 grains of chloral at night, four ounces of wine were sufficient to induce the chloral-rash.

Chloral erythema has also been studied from other sides; we may specially mention the observations of C. Browne, which led him independently to results similar to those of Schule. He too observed, as a consequence of chloral, a great tendency to congestions of the head and face, which in a few cases were limited to the cheeks, but in many extended to the forehead, neck and ears. He observed simultaneous excitement of the vascular system, strong contraction of the pupils, and ingestion of the conjunctiva. The symptoms also were at their height after the taking of quite moderate doses of alcohol; he attributed this to temporary paralysis of the vaso-motor centres in the head and neck. Browne also observed another case in which, after a dose of chloral (the amount of which is not stated), a diffuse inflammatory redness appeared over the whole body, so that it was thought advisable to isolate the patient; in ten hours this redness had disappeared. Husband gave to a patient daily for eight days, two 20-grain doses, and for five days more two 30-grain doses of chloral; a scarlatinal rash broke out over the whole body, accompanied by fever and tenderness of the skin, and was followed by desquamation.

The effect is not always limited to congestion and erythema of the skin, but other skin affections are occasionally produced; for instance, our female patients, who had taken 60 grains of chloral daily, first had erythema of the face, and later a papular

rash on the arms, with red bases. In some, nettle-rash occurred.

The swelling, accompanied or not by rash, which has been noticed in the face after continued use of chloral, may equally occur on extensive portions of the body. In several patients observed at Illenau, a swollen condition of almost the whole body was noticed, which might be ascribed to serous infiltration of the skin from stasis of blood.

With these affections of the skin must be associated affections of the mucous membranes, which, so far as they are not the result of direct chemical irritation, must be considered analogous to the former; *i. e.*, they are produced by paralysis of the vaso-motor centre. For instance, in some patients treated with chloral we observed redness, swelling, and secretion of the conjunctiva, which became severe if the medicine was continued, but speedily disappeared on its disuse. Other observers, especially Balfour and Brady, have noticed this conjunctivitis. In three of our patients, probably from the mechanical irritation of the medicine, there was moderate catarrhal sore-throat, with pain in the fauces. In one of Curschman's patients there was pronounced redness and swelling of the epiglottis and of the false vocal cords.

The evil effects of chloral are not always limited to vaso-motor paralyses and transitory neuroses of the skin and mucous membranes; if the conjestions are not removed, the after-consequences may be severe or even dangerous if the seat of the affection is in the vital organs. We may here refer to a case which resembles the former as regards the affection of the skin and mucous membrane, but which became serious in consequence of severe swelling of the glands (Chapman: *Lancet*, 1871). Reimer observed in a series of patients the following fact, especially after the use of morphia and chloral together: After slight external pressure there was congestion in circumscribed spots with much lowered sensibility, which quickly disappeared if the pressure was soon removed. Under less favorable circumstances, the red spots swelled and assumed a darker color; vesicles were soon developed, which might even run on to sloughing. This phenomenon is distinguished from the usual mark after long pressure in conditions of gradually sinking vitality, especially because, whilst the epidermis and cutis remain intact, it extends into the deep subcutaneous tissue.

An important symptom which we have noted in a series of cases of the long-continued use of chloral is an interference with respiration, which may remain slight, and scarcely troublesome to the patient, or may become positive dyspnœa. This symptom was experimentally produced by the Swede Ham-

mersten, who observed severe dyspnœa in cats that had taken chloral, and was briefly noticed by Jastrowitz, one of whose patients, while taking chloral, suffered from severe dyspnœa with occasional cessation of breathing; and it was finally completely described and explained by Schule, who observed a patient who, after long use of chloral, used regularly to suffer after meals from a sense of oppression which made going up stairs extremely difficult, and even interfered with speech, although there was no chest disease to account for this. The symptoms persistently recurred in spite of all treatment till the chloral was left off, when the oppression entirely disappeared.

A similar chloral dyspnœa, though not so long continued, occurred in many cases observed by us, either with or without a rash, and a feeling of heaviness and anxiety.

That the chloral dyspnœa does not always stop at the lower degrees, but may proceed to the most severe and dangerous developments, is shown by the following observation communicated to me by an eminent physician. This gentleman was summoned in consultation to a lady prostrated by long sufferings, who had of late suffered from attacks of extreme dyspnœa, which had increased to asphyxia; at the same time the face was swollen, the facial muscles paralyzed, and there were also all the signs of cerebral effusion. Every remedy had failed, and the patient seemed on the brink of the grave. The physician therefore recommended the discontinuance of a daily dose of 45 grains of chloral which had been given as a hypnotic; whereupon all these highly alarming symptoms vanished in an almost magical way, the cerebral disturbance ceased, and the respiration quickly resumed its normal type!

The dyspnœa may be anatomically explained, by analogy with the effects of chloral upon the skin and mucous membrane, by hyperæmia of the lungs which is produced through the channel of the vaso-motor nerves. We find here a further confirmation of the assumption that chloral operates upon the vaso-motor centre and the medulla oblongata, and that its paralyzing influence extends thence to the peripheral branches of the affected nerves. This might also lead to a practical contra-indication of chloral in all morbid conditions where there is a tendency to congestions or stases of blood in the lungs.

We come now to a fourth group of cases in which both the quality of the symptoms and their greater or less extension in the organism indicate a distinct change in the composition of the blood. In this connection the following cases observed by Crichton Browne may first be referred to; their interesting phenomena justify a detailed report:—

Case I.—A woman, aged 69, suffering from periodical mania, had 20 grains of chloral thrice daily; on the fourth day a red-

ness was developed on the skin of the chest and shoulders, which did not vanish on pressure; on the sixth day the eruption had extended over the whole trunk and limbs, livid spots and deep red patches alternating. The lips and the mucous membrane of the mouth were excoriated, the gums spongy, the tongue blistered and ulcerated, the breath fœtid. The general state was one of great depression; pulse 120. On the eleventh day the ulceration of the mouth had extended further; the lips were covered with crusts. The petechial eruption was diminished on the chest and abdomen, the spots were yellowish, with patches of white skin between them; the spots on the arm lost their redness later. On the fifteenth day there was a sort of general desquamation; fissures of the skin over the sacrum, and in the neighborhood of the joints. From that time convalescence proceeded, and ordinary health was restored.

Case II.—A woman, aged 46, suffering from cardiac disease, hemiplegia, and dementia, took 15 grains of chloral three times a day, with a calming effect. On the nineteenth day of the treatment numerous purple-red spots appeared in the neighborhood of the left elbow; on the next day many similar spots were seen on the shoulders and fore-arms, which coalesced with the others. On the twenty-first day livid spots came on the face; the left arm swelled and became hard; on its reddened surface appeared a multitude of minute points of a much deeper color, which did not diminish on pressure. Next day there were dark purple spots and discolorations, some small, round, and circumscribed, others broad and irregularly shaped, on the legs and abdomen, and in stripes on either side of the vertebral column. Simultaneously with the petechiæ there were great prostration, tendency to somnolence, weakness and excitability of the pulse, sore lips, thickly coated tongue. On the twenty-third day the spots and discolored patches had extended in every direction, and the previously bright red spots had assumed a deep purple color. Finally, signs of lung congestion appeared, with gradual failure of power, and death, after several fainting-fits, on the twenty-sixth day. At the autopsy numerous ecchymoses of every shape and size were observed more or less on all parts of the skin; the right lung was congested and œdematous, the heart dilated and its valves thickened; over the right central hemisphere there was a large arachnoid cyst containing fluid blood.

With the foregoing may be joined a case related by Monkton, in which, after four days' administration of 60 grains of chloral daily, a rash resembling slight variola with hæmorrhagic purpura appeared, and death occurred on the sixth day, by syncope. Finally may be mentioned two patients of Pelman, in whom, after treatment with chloral, there were larger and smaller petechiæ over the whole skin: in one, which proved fatal,

numerous petechiæ were found on the mucous membrane of the larynx and under the endocardium; and a hæmatoma on the right side in the skull reaching to the base, the fluid contents of which gave evidence of their recent origin.

I shall now relate a case observed by myself, which is yet more striking from the multiplicity of its phenomena, which are of a kind perhaps to give us some clearer understanding of their origin. The case was observed by me at a time when the evil effects of chloral hydrate were not yet known; the medicine was therefore continued in spite of the most multiplied symptoms, because chloral was not for a long time recognized as their cause: the affection was therefore followed up further than we should dare to do now that our increased knowledge would oblige us to stop at an earlier stage. [Here follows a detailed report of the case, which need not be given.] If we sum up the weightier symptoms of this case, we find a young, strong, previously healthy person suffering from uncomplicated mania, in whom, on the ninth day of chloral treatment, a rash appeared in the form of groups of red spots, which soon became confluent. On the twentieth day the temperature and pulse rapidly rose to a febrile pitch; three days later the temperature had reached 106.7°; large and repeated doses of quinine were given without result, and baths had only a temporary effect. Œdematous swelling of the face, cheeks, eyelids, and ears now set in. During the whole course of the disease, the skin, so far from returning to its natural appearance, was the seat now of impetiginous, now of moist, and now of scaly eczema and ichthyoses, so that the process of desquamation, instead of being short as in the acute exanthemata, occupied many weeks, during which great sheaths of epidermis were cast off from all parts of the body. The profound lesions of the skin nutrition were evidenced in the later stages by a remarkable shedding of the hair and a gradual falling off of all the nails of the hands ahd feet. The affection of the skin was accompanied by a similar one of the mucous membranes, first of the intestines, which kept up watery diarrhœa in spite of medicines, and then by a similar affection of the conjunctiva and the bronchi. From the sixth week of the disease onwards a series of large abscesses formed on both arms over the shoulders and arm-pits, which secreted a considerable quantity of pus. Whilst these phenomena were occurring, there had been for eight weeks a continuous fever, occasionally remitting, and then again running up to a temperature beyond 104°.

The symptoms which we have now collectively described must be defined as chronic blood-poisoning. We cannot, however, place this in any of the known groups; we have not to do with a pyæmia or septicæmia, nor with a metallic or vegetable poisoning, since none of the causes have been at work which would

lead to these affections, nor do we observe their characteristic phenomena; still less did the affection which the medicine produced in this patient resemble puerperal mania. In fact, there was no other external cause except the administration of the chloral: this medicine, which in even much larger single doses produces no such effect, was for ten weeks given in nightly doses of 45 to 60 or even 75 grains, sometimes in two doses daily. The symptoms began, after a certain saturation had been produced by accumulation, to spread further and further, and finally to assume the complete picture of a chronic blood-poisoning.

The origin of the disease leads us thus, by exclusion, to conclusions which have a high degree of probability, and we are also in a position to adduce positive facts. If a glance be cast at the symptoms observed by ourselves and others, after a more or less continued administration of chloral, we meet with the greater part of the phenomena observed in our last case, especially the very various affections of the skin and mucous membranes, the alterations in vascular action, and finally the profound alterations of the blood, which in some cases remind us of the phenomena of scurvy. The characteristic feature in the morbid picture which we have given consists less in symptoms which in themselves are altogether new, than in the assemblage of the most heterogeneous phenomena, which previously had only been observed singly, in one person and in a most aggravated degree of intensity.—*The Practitioner.*

Summary of Observations upon the Effect of the Galvanic Current upon the Auditory Nerve. By CLARENCE J. BLAKE, Boston.

Since the publication of the experiments of Brenner, and the interest excited by his observations on the reaction of the auditory nerve, under the influence of the galvanic current, the application of electricity to the diagnosis and treatment of affections of the ear has become much more general, and not only so far as concerns the condition of the auditory nerve, but also in the treatment of diseases of the middle ear, as is evidenced in recent German and English publications.

In his Beleuchtungsbilder des Trommelfells, Prof. Politzer says: "With the advance which is daily being made in the diagnosis and treatment of diseases of the ear, the domain of nervous deafness is being rapidly encroached upon and diminished." To any one who has followed the progress of aural surgery during the past ten years, this remark is plainly true, but there still remains a class of aural affections of the nature of which the speculum and otoscope

give us but little information, and for which the ordinary surgical measures afford but slight relief. To this class belong, not only those cases of deafness where the middle ear shows no symptom whatever of disease, but also those in which a disease of the tympanum may be accompanied by, or may mask an affection of the labyrinth, or of the auditory nerve; and it is in these cases that we have to seek some more subtle means of diagnosis and of treatment.

The conditions under which the galvanic current may be employed by the aurist with advantage, as a means of assistance in diagnosis, may be superficially classified as those of—

Chronic catarrhal inflammation of the middle ear of long standing, with considerable deafness and diminution or absence of the perception of sound conveyed through the bones of the head.

Chronic catarrhal inflammation of the middle ear of shorter duration, accompanied by tinnitus aurium and diminution of hearing.

Cases of deafness occurring during pregnancy, in child-bed, at puberty, or referred to mental disturbance, mental or bodily exhaustion, or accident, as the cause, in which the middle ear shows no signs of disease whatever, or not sufficient to account for the degree of deafness which may pertain in such cases.

Deaf-mutism, congenital or acquired.

The principle laid down by Prof. Brenner, to whom is due the credit of establishing a formula of reaction of the auditory nerve, under the action of the galvanic current, is, that "the auditory nerve in health reacts to the galvanic current in a regular manner by distinct sounds at and during the closure of the negative, and at the opening of the positive pole; that these sounds may be whistling, ringing, hissing, singing, humming, and rumbling; that they vary in different individuals, and are modified by the strength and duration of the current; that the most frequent is whistling, which is clear, agreeable and musical, and that any departure from these reactions indicates disease."

The statements of Brenner were at first denied by some observers, but were also and more recently largely confirmed by others, so that the formula established by him may be taken, not as a matter of conjecture, but as a positive contribution to our knowledge of the condition of the auditory nerve. A means is thus given of answering the question in any given case, as to whether the auditory nerve is or is not in a normal condition, and with this a point of decided value both as concerns prognosis and treatment. On the other hand, however, it is not always possible to establish a formula of reaction of the auditory nerve; indeed in many cases no formula whatever can be obtained, although the necessary conditions, with regard to a successful application of the current, are fulfilled. In such cases, the practical value of the discovery of Brenner is much diminished, and it becomes neces-

sary to seek some other demonstration of the effect which the galvanic current may have upon the auditory nerve, and this may be accomplished by testing the effect which the current has upon its perceptive power.

The cathode being applied in front of the ear to be tested, and the anode held in the hand of the opposite side, and the current gradually increased, I have found the perception for high musical tones to increase from three to five thousand vibrations in the second above the highest limit of hearing before the application of the current. This increase in perception continued during the passage of the current, and for a short time after the opening of the cathode, but was speedily diminished by a reversal of the current and application of the anode. Ritter has observed, that on passing a direct continuous current through his own ears, the sound of a tuning fork, G, gradually increases in pitch with the increase in intensity of the current.

The cathode being applied in front of the ear, as in the previous experiment, we find that the passage of the galvanic current increases not only the limit of perception of musical tones, but also the intensity of perception, the degree of increase in intensity of perception being a measure of the degree in which the auditory nerve responds to the stimulus.

In establishing this observation, experiments were first made in cases of normal hearing, and later in those of diminished hearing, resulting from disease of the middle ear, or without visible cause. In all cases a current from a Stoehrer battery without the rheostate was employed, and the electrodes applied, the cathode in front of the tragus, and the anode to the hand of the opposite side. A tuning fork set in vibration by means of a spring hammer giving a stroke of uniform intensity, was first held opposite the ear to be tested, and the length of time during which the tone was heard noted; the same test was repeated under the stimulus of the galvanic current, and the increase in the duration of the perception also noted. In the healthy ear the increase is from one-twelfth to one-sixth of the normal duration of perception, on the average, and this proportion diminishes in accordance with the diminished reactive power of the auditory nerve.

As an illustration of this manner of employing the continued current, cases of chronic catarrhal inflammation of the middle ear, forming about 27 per cent. of all aural affections occurring in this climate, may be instanced. In the ordinary course of the disease there occurs first a diminution of patency of the Eustachian tube, rarefaction of the air contained within the middle ear, and pressure of the membrana tympani inwards, the thickening of the mucous membrane lining the tympanum, and forming the inner coat of the membrana tympani, tending to retain the latter structure in its abnormal position, thus producing an abnormal degree of

intra-labyrinthine pressure, and preventing also the proper transmission of sonorous vibrations from without inwards to the labyrinth. As this condition continues and increases, there is gradual increasing diminution of hearing on account of the changes in the middle ear, and secondarily, a diminution of perceptive power of the auditory nerve, as shown by tests with the watch and tuning-fork, pressed upon the temple and held between the teeth. The use of the galvanic current in such cases, will serve to determine the degree to which the auditory nerve has become affected, and also the power of perception under stimulation remaining to it, the result materially influencing not only the prognosis but the treatment.

In those cases of chronic catarrhal inflammation of the middle ear in which the perceptive power is but slightly diminished, and where tinnitus aurium is a prominent symptom, the result of the use of the galvanic current is even more satisfactory. As a result of the progressive changes within the middle ear, there is, with the pressure of the membrana tympani and ossicula inward, evidence of the effect of this pressure and the accompanying irritation in the auditory nerve in the occurrence of subjective noises, noticed at first occasionally, and finally becoming constant, and increasing with the progress of the disease in the middle ear. In many of these cases it will be impossible to obtain a positive reaction according to the formula of Brenner, but we may be guided in the application of the current by the tests described, and in addition by the effect which the current has upon the tinnitus aurium. Its first application will of course be purely experimental.

The hearing having been carefully tested with regard to the hearing distance by a test watch, the perception of high musical tones, by means of Konig's rods, and the duration of perception of the tuning fork, and the patient's attention drawn to the degree of the tinnitus aurium, the cathode may be first applied in front of the ear, and then the anode of equal strength and for the same length of time, the hearing being again carefully tested, during and after the passage of either current.

It will be found as a rule that the current which diminishes the tinnitus aurium increases the hearing, and that the current which increases the tinnitus diminishes the hearing. In cases where the tinnitus is diminished without increase of the hearing, this effect is usually produced by the use of the anode, the cathode increasing the tinnitus, without a corresponding increase of hearing. When the hearing is increased, together with an increase of the tinnitus, this result is usually obtained with the use of the cathode.

In the use of the galvanic current in the treatment of these cases, we should be guided by the result of the experimental application; the current to be employed being the one which increases the hearing and diminishes the tinnitus, or, in default of this double

effect, the current which increases the hearing, even at the expense of increasing the tinnitus, experience showing that the tinnitus, though temporarily increased, gradually subsides and diminishes with the improvement of hearing at subsequent applications of electricity. The following case is an illustration of the latter observation: The patient was a man in robust health, twenty-one years of age; the hearing had been gradually but noticeably decreasing for more than three years, and during that time there had been a constant rushing sound in both ears; this sound did not vary materially with change of climate, weather, or condition. The membrana tympani of both ears was concave, opaque and of a dull gray color. The use of the air douche and catheter did not improve the hearing, which was $\frac{1}{12}$ in the right ear and $\frac{2}{12}$ in the left ear, as tested by the watch. The perception through the bones of the head, for the watch, was better in the left ear, and for the tuning-fork, better in the right ear, but diminished in both. The current from a Stoehrer battery was applied, without obtaining formula of reaction; the use of the anode neither diminished the tinnitus aurium nor improved the hearing; the use of the cathode increased the tinnitus aurium, and also improved the hearing. The use of the cathode was therefore continued at intervals of two days, and after the third application, the hearing tested by the watch had increased to $\frac{4}{12}$ in the right ear and $\frac{3}{12}$ in the left ear, accompanied by a sensible diminution of the tinnitus aurium. In the following case also no positive formula of reaction could be obtained: A woman, thirty-five years of age, who had never been robust, and who had performed much mental labor, and who was five months pregnant at the time of treatment, had, in addition to the diminution of hearing consequent on a slight catarrhal inflammation of the middle ear, a continuous rushing sound in both ears, varied occasionally by rhythmical beating and a loud ringing. The use of the cathode increased the tinnitus, but did not increase the hearing; the use of the anode, however, increased the hearing and diminished the tinnitus aurium, which did not increase to its former degree until three or four days had elapsed. By repeated use of the anode, during a period of six weeks, the tinnitus disappeared entirely and the hearing materially improved. In the case of a woman fifty years of age, the hearing having gradually diminished during a period of five years, and more especially since a severe mental shock, until it was but $\frac{8}{12}$ in the right ear, and $\frac{9}{12}$ in the left ear, the galvanic current gave the normal formula of Brenner. It was found, however, that the use of the cathode increased the hearing distance, and also the perception for musical tones, and diminished the tinnitus aurium, which had been constant and annoying. After the fifth application of the cathode, the hearing had increased to $\frac{6}{12}$ in the right ear, and $\frac{7}{12}$ in the left ear. In this case the membrana tympani was trans-

parent, and normal in position, the Eustachian tubes perfectly free, and the hearing was not increased by the use of the air douche.

As an instance of the action of a stimulant current upon the auditory nerve in a patient, in whom the hearing was not materially improved, the following case may be mentioned:—

A man thirty-two years of age, first noticed diminution of hearing and a rushing sound in both ears, ten years before the date of his application for treatment. His general health had been good, with exception of occasional attacks of malarial fever, for relief from which he had used quinine in large quantity. The hearing had so far diminished, that the watch was not heard when pressed upon the auricle, and the tuning-fork held between the teeth, was heard only in the left ear. In the right ear, however, a tone of 50,000 v. s. was distinctly heard, and in the left ear a tone of 45,000 v. s. The membrana tympani of both ears was transparent and apparently normal, except that it was quite concave. The hearing was not improved by the use of either Politzer's air douche, or the catheter. No formula of reaction could be obtained, but the use of the cathode increased the perception for high musical tones to 60,000 v. s., and for duration of hearing of the tuning-fork, from twenty seconds to thirty-five seconds.*

This increase in the perception for musical tones persisted but a short time after the application of the current, the duration of perception of the tuning-fork, however, continued to increase, but never reached the normal standard, and the improvement in the general hearing was, on the whole, so very slight, that the use of the current was finally abandoned. This case presented several points of interest. So far as could be determined, the middle ear was in a healthy condition, with exception of such changes as were evidenced by the concavity of the membrana tympani. Assuming the auditory nerve to be in a normal state, we should expect an increase in the limit of perception for high musical tones, as was the case, on account of the increased tension of the membrana tympani; the same condition would tend to diminish the hearing for lower tones, as was the case in the test with the tuning-fork, and in the hearing for the voice. The use of the cathode increased the hearing for the voice, and for the watch slightly, and decidedly increased the perception for high musical tones, and also the duration of the perception of the tuning-fork; and an excision of a portion of the membrana tympani, which operation was subsequently performed, had no appreciable effect upon the hearing whatever.†

* The tuning-fork, A 562 v. s., being struck by the spring-hammer with a force equivalent to one pound falling one inch, the normal duration of hearing is from 55 to 60 seconds.

† In the majority of cases in which this latter operation is performed, the perception for high musical tones is immediately increased; in one case in which

For practical purposes, in the ordinary routine of aural practice, the galvanic current may be employed in the simplest manner, without the intervention of the rheostate, and by applying one electrode in front of the ear and the other to the hand of the opposite side; at least my own experience has led me to content myself with this method of application.

In many of the cases belonging to the classes cited, in which it might be deemed advisable to employ the galvanic current as a means of diagnosis, it may prove impossible to obtain any of the definite formulæ of Brenner. It is in such cases that the tests and reactions above described may be of service.—*Archives Scientific and Prac. Med.*

ARTICLE V.—*A Case of Rheumatic Carditis, Suddenly Fatal.* By H. A. JOHNSON, M.D. and Prof., Chicago, Ill.*

I saw Mrs. S., æt. 31, first on January 9th, 1873, early in the afternoon. I found her suffering from ill-defined muscular soreness, especially over the abdomen and in the back—bowels not disturbed—skin moist—pulse slightly accelerated—tongue moist and white. I prescribed the following:

R. Potass. Bromid, - - - - - dr. iij.
Aq. Camph., - - - - - f oz. iv.
M. ft. sol. Sig. One tablespoonful every three hours.

Jan. 10. Saw her in the afternoon. She passed a restless night. Some nausea this morning, which she attributes to the medicine; supposed that she had taken morphine or opium. Pain more decidedly rheumatic — hips and knees sore — motion difficult. Menses came on during the night or this morning, several days earlier than expected. Begs for something to allay pain, which was now almost unbearable. I directed the following:

R. Hydr. Sub Mur., - - - - - gr. jv (4)
Morph. Sulph., - - - - - gr. j.
Sodæ Bi Carb., - - - - - scr. j.
M. Ph. pulv. No. vj. (6).
S. One every three hours.

the experiment was made the patient heard a tone of 100,000 v. s. distinctly, after the operation, the extreme limit before the operation having been only a tone of 35,000 v. s.

* Received too late for insertion in its proper place.

Jan. 11, P. M. Pain still continues in hips and knees. She attributes a part of it to the advent of the menses. Condition of the stomach improved. Has rested and slept some under the influence of the powders of morphine, sub muriate and soda, but has not taken them as often as directed. I ordered them to be continued as often as necessary to relieve pain.

Jan. 12. Bowels have moved—probably from the effect of the powders, though not all of the four (4) grs. of calomel has yet been taken. Pains more general—complains of shoulders. Skin moist—tongue coated, white, moist—urine sufficient in quantity, and normal in quality—pulse 96, or a little below 100, per minute. Made no change in the treatment.

Jan. 13. The condition about the same. Rheumatic difficulty more decidedly migratory. The powders of calomel, morphia and soda, prescribed on the 10th, have been renewed—without my direction, however. Does not take much food. Has all the time been worse during the night than during the day. No change in treatment.

Jan. 14. I had been quite sick for two or three days, and on the 14th was unable to leave my bed. I heard nothing from the case till the morning of the 15th, when I learned from Dr. F. H. Davis and Dr. Lester Curtis that they had both seen her on the evening of the 14th. Dr. Curtis made the following prescription:

R. Potass. Bromid, - - - - - dr. ij. ss.
Aqua, - - - - - - } *aa* f oz. j.
Syr. Cort. Aurant., - - - }

M. S. One teaspoonful every hour as directed.

I am told that she took one dose of the mixture prescribed by Dr. Curtis, after which Dr. Davis was sent for. He ordered the following:

R. Potass. Bromid, - - - - - dr. iv.
Cryst. Carbolic Acid, - - - - gr. vj.
Glycerine, - - - - - - f oz. ss.
Aqua, - - - - - - f oz. iij. ss.

M. One teaspoonful every three hours.

This was continued during the night, and till I saw her on the 15th. The powders were continued as they were judged necessary to allay pain.

I saw her about 2 P. M. They said that Dr. Davis' medicine had given her great relief. Some muscular tenderness yet over the chest and in the shoulders—pulse about 100, regular, and moderately full. Directed the continuance of the bromide of potass. and carbolic acid solution. Saw her again in the evening.

Jan. 16. Less positive pain, but had a restless night—only "snatches of sleep," as she expresses it. Has not taken the powders since yesterday. Directed the following:

R. Tr. Opii Camph., - - - - - f oz. j.

S. Half teaspoonful every two hours, if awake.

Continue the bromide and carbolic acid solution. She only took one dose of the paregoric.

In the evening she begged for something to relieve the pain, which had become much more decided, especially in the limbs and joints—could hardly move in bed. I gave her a hypodermic injection of morph. $\frac{1}{4}$ gr. and atropin $\frac{1}{60}$ gr. She went to sleep in about five minutes, and slept quietly till three or four o'clock in the morning, after which she was restless—slept between seven and eight hours.

Jan. 17. Found her in the morning absolutely helpless—arms, hands, fingers, hips, knees, ankles and toes even, tender, and most of the joints somewhat swollen—skin hot, but still moist—tongue moist—urine scanty—pulse over 100, hard, small but regular—heart sounds normal in quality. Directed the following:

R. Tr. Colchici, - - - - - f dr. j.
Potass. Bi Carb., - - - - dr. ij.
Potass. Cit., - - - - - dr. iij.
Aq. Camph., - - - - - f oz. ij.
Syr. Limon., - - - - - f oz. iv.

M. ft. sol. Take one tablespoonful every two hours.

This prescription was continued during the day. She was a little flighty when left alone, but recovered perfectly when spoken to, and answered intelligently questions addressed to her. In the evening, about the same. Has not slept during the day—in fact, not much since 3 or 4 A. M. Gave again a hypodermic injection of morph. $\frac{1}{8}$ gr. and atropin $\frac{1}{75}$ gr.

January 18, morning. Limbs less painful and tender, can move them a little—pulse about 95—skin moist, and cooler than last

night—slept between six and seven hours under the influence of the injection of morphine and atropine. I directed the colchicum mixture to be continued.

P. M. Bowels have moved freely during the day, copious watery discharges—limbs better, can use them quite well—complains of pain most in right shoulder—is very weary and wants sleep. Discontinued colchicum mixture, and gave, between 3 and 4 P. M., a hypodermic injection of morph. $\frac{1}{8}$ gr. and atropin $\frac{1}{75}$ gr.

January 19, morning. Found her free from pain in joints—had slept several hours during the night, but was still restless, anxious—talking a little incoherently, but answering intelligently when spoken to—pulse about 100—urine scanty—micturition difficult and painful. Directed the following:

R. Potass. Acet., - - - - - dr. iij.
Potass. Bromid, - - - - - dr. ij.
Spts. Nit. Dulc., - - - - - f oz. j.
Syr. Limon., - - - - - - f oz. v.

M. ft. sol.
Take one tablespoonful every two hours till relieved.

P. M. Has passed urine freely and without pain—skin quite moist, but hot—pulse more frequent, 115 per minute, regular. Suspected cardiac trouble—found heart sounds normal in quality—no articular pain except in right shoulder, and this not severe. Discontinued diuretic, and ordered the following:

R. Sat. Tr. Rad. Aconite, - - - - f dr. j.
Morph. Sulph., - - - - - gr. ij.
Syr. Simp., - - - - - f oz. ij.

M. ft. sol.
Take one teaspoonful every two hours.

Saw her three times during this day. She slept during the afternoon and evening only a few minutes at a time, and then would start up suddenly, saying something irrelevant, but upon being spoken to, becoming perfectly conscious.

January 20, morning. Pulse 90, soft, moderately full, regular in rhythm. Mr. S. says that after my visit last night the pulse went up to 120 per minute. Skin moist, not so hot as during the day of the 19th—urine free in quantity—tongue moist—little or no pain anywhere—stomach tolerates milk.

6 P. M. Pulse 84, regular, soft, moderately full—skin moist and cool, but not cold, apparently normal in its qualities—has had no pain during the day—during the last twenty hours has had no continuous quiet sleep. Has been taking during the day half teaspoonful doses of the aconite and morphine mixture. For the purpose of procuring sleep, I directed the following:

R. Chloral Hydrate, - - - - dr. j.
Syr. Simp., - - - - - - f oz. ij.
Glycerine, - - - - - - f oz. j.
Chloroform, - - - - - - f dr. ss.

M. ft. sol.
S. Dose, one tablespoonful.

Of this mixture, one tablespoonful was ordered to be given every hour till she slept. She took but one dose, and soon afterwards became wildly delirious.

At 10 P. M., or about that time, I saw her again. The pulse was then 104 and somewhat irregular, small, weak—breathing oppressive, panting—vomited fluid matters, apparently milk and mucus, immediately after I came in—bowels also moved, did not see the stool—she was helped out of bed—did not seem to have any pain. In answer to questions, complained only of nausea and oppression at epigastrium. She had been now twenty-four hours without continuous sleep, and I gave, for the purpose of producing it, a hypodermic injection of morphine, gr. $\frac{1}{3}$, and atropin, gr. $\frac{1}{75}$. She went to sleep in about eight minutes—the pulse became more regular at 102 per minute—breathing easier, but not free and full—the temperature of the skin seemed to be normal, and was neither dry nor excessively moist.

At 3 A. M. of the 21st, I was sent for, and upon arriving I found her dead. Mr. S. said that she had slept continuously from the time I left—that between 2 and 3 A. M. they turned her in bed, and that she suddenly ceased to breathe. She had nourishment as the stomach would tolerate it. During the last day or two milk was grateful, and she took as much of it as she liked.

Throughout her sickness, she was worse at night.

No. 4 Sixteenth St., *Feb.* 1, 1873.

Editors' Book Table.

[NOTE. — All works reviewed in the columns of the CHICAGO MEDICAL JOURNAL may be found in the extensive stock of W. B. KEEN, COOKE & CO., whose catalogue of Medical Books will be sent to any address upon request.]

BOOKS RECEIVED.

A Guide to Urinary Analysis, for the use of Physicians and Students. By HENRY G. PIFFARD, Physician to the Charity Hospital— to the New York Dispensary for Diseases of the Skin, etc., etc. William Wood & Co. 1873.

An excellent monograph, comprehending in less than a hundred pages what is most essential for the busy practitioner to know upon this much neglected subject. This book is an effort in the right direction, *i. e.*, to condense medical literature and simplify scientific proceedings. The subject-matter of the work appears to be fully up to the times, and the style and language far ahead of them. Appended is an index of the recent bibliography of urinary analysis which must prove a great assistance to students and writers in the prosecution of their investigations. The custom of appending to scientific works a bibliographical index is one which should be adopted universally. We hope to see the example set by the few followed by all. W. H.

Manual of Thermometry, for Mothers, Nurses, Hospitalers, etc., and all who have charge of the Sick and of the Young. By EDWARD SEGUIN, M.D. New York. Geo. P. Putnam & Sons. 1873.

This little volume is a condensed summary of the principles which underlie the relations of temperature to disease, derived in part from the author's own experience, and in part from the writings of Wunderlich, whose "Manual of Medical Thermometry" was translated by this author in 1871. The work is destined to prove valuable not only for what it actually contains, but also for many suggestions which will serve as initial points for more extended researches. The matter is good (we wish we could say as much for the manner of its presentation), the style is obscure, the language stilted and pedantic. The intermingling of sound medical science with doubtful theology is, to say the least, in very bad

taste; more especially as, in his denunciation of what he terms "theurgic medicine," the author betrays the source from which his own theological (?) instructions have been derived—the Commune. *Ne sutor ultra crepidam.* W. H.

An Introduction to the Study of Clinical Medicine, etc., etc. By OCTAVIUS STURGES, M.D., Cantab., etc., etc.

The author of this "Introduction" has endeavored to teach the student, not so much what to observe, which he is supposed to learn from systematic text-books, but how to observe it, and has succeeded well in his endeavor. The work will assist the careful student in formulating his knowledge acquired empirically, and will amply repay a thoughtful perusal of its pages. If the reader learns nothing new therefrom, he will at least be taught the practical and useful application of much that he already knows, but had hitherto failed to utilize from lack of knowing how.

W. H.

Chemistry: General, Medical, and Pharmaceutical, etc.; a Manual, etc. By JOHN ATTFIELD, Ph.D., F.C.S., etc. 5th Ed. Henry C. Lea, Philadelphia. 1873.

One of the most useful and valuable hand-books within reach of the American medical student. An objection justly made to many of our text-books, and especially applicable to those of which chemistry is the subject, is their assumption of the possession of a greater amount of knowledge by the student than he can, in the majority of cases, legitimately claim. The evil consequences of this are apparent in the superficial character of the knowledge of chemistry acquired by most medical men. As a rule, the student comes to the study of his profession profoundly ignorant of the elements of the sciences which he is expected to study; unless, therefore, these sciences be presented to him, at first, in their simplest forms of expression, he will inevitably become discouraged, and instead of a savan, become a sciolist. To those who desire to understand chemistry, we cordially recommend Mr. Attfield's book, and would comprehend in this class, not only medical men, but all those who desire to gain an insight, from a scientific standpoint, into what is popularly termed "the chemistry of every day life." W. H.

On the Treatment of Diseases of the Skin: with an Analysis of Eleven Thousand Consecutive Cases. By Dr. McCall Anderson, Professor of Practice, etc., etc. Philadelphia: Henry C. Lea. 1873.

Dr. Anderson's analysis is valuable inasmuch as it is essentially practical, and especially so, that the author has evidently aimed to simplify the treatment of this troublesome class of maladies, paying much more regard to the substantial conditions of the case than to minute specification. His classification of skin diseases presents some new features well worth the attention of practitioners. The appearance of this work indicates progress in the right direction, *i. e.*, of simplicity rather than complexity in the study of disease. W. H.

The Mechanism of the Ossicles of the Ear and Membrana Tympani. By H. Helmholtz, Professor of Physiology in the University of Berlin. Translated from the German, with the author's permission, by Albert H. Buck, and Normand Smith, of New York. William Wood & Co., New York. 1873.

Helmholtz' name has become one of the watchwords of scientific progress in the present decade. The volume whose title is given above, is another addition to the many valuable contributions to science of this great German physicist and physiologist, whose labors have always been directed to the harmonizing of natural laws—the unification of science.

The present era in medical history, more than any preceding, is marked by the appearance of scientific monographs, evidences of the impetus which special studies have received, in obedience to the demands of the spirit of the age for greater scientific accuracy, and points of departure for new and more minute investigations. The student accepts eagerly and studies earnestly the little monograph which promises, at the cost of a few shillings in money, and an hour or two of study, to acquaint him with the facts and principles which he seeks to know, while he turns away in despair from the ponderous octavo in which the grain of wheat is to be reached by the purchase and sifting of the bushel of chaff. W. H.

Editorial.

Πρὸς ἡῶ τε καὶ ἡλίου ἀνατολῶς ἐποιέετο τὴν οδόν.—Herod. vii. 58.

Head of the Firm gone East!

We wonder if old Herodotus ever thought how aptly the above quotation would serve as a sign-board over the doors of most of the firms in this, then *terra incognita*, three thousand years after the hand which wrote it had mouldered into dust. The very aptness of the language goes to show that there is "nothing new under the sun;" that even in the days of Herodotus they "went East!" In compliance with the time-honored custom, and in obedience to the necessities of the case, the JOURNAL hangs out the "notice" over its own door. The July No. went to the devil (printers) before we were able to chronicle our loss, and to explain to our readers the cause of what we fear was but too apparent to their enlightened perceptions, *i. e.*, the absence of its usual amount of *vis vitæ*. Our venerable Senior has departed this life, for a better, we trust, in Europe. His departure at the early dawn was not exactly in the nature of a flight, but rather a masterly retreat, in which much strategic skill was displayed to elude the pursuit of hosts of patients, eager to outflank him.

If our readers will exercise the virtues of forbearance and charity, they will surely be rewarded therefor. They have not been forgotten in this hasty exodus of the Senior Editor, a portion of whose mission to London and Paris, is to secure correspondents for the JOURNAL, that its readers may receive early advices, from first hands, of advances and improvements in medical science and practice. W. H.

We were recently honored with an invitation to attend the Semi-Annual Meeting of the Dubuque County Medical Society, at Dubuque, Iowa. This Society is one of the oldest in the Northwest, having attained its full legal majority of twenty-one years; its membership comprises some of the first physicians of the State of Iowa. The proceedings of the meeting were conducted with much dignity and efficiency, by Dr. Jas. C. Lay, Pres., and Dr. Luck, Sec., and comprised very interesting reports of cases, by Drs. Staples, Watson, McCluer, Smith, Missling, Luck and others. The

discussion of these gave abundant evidence to show that the best in our profession are not all in the large cities, and that our professional brethren of "the beautiful land" are keeping step to the progress of the times, and in the front rank too. The report of the Board of Censors, by Dr. Asa Horr, Chairman, rejecting two applications for membership, on the ground of professional incompetency and questionable conduct, was dignified in its tone, and temperate in language, but very firm and decided in its expression. We were entirely satisfied that scientific progress and professional ethics are perfectly safe in the hands of our neighbors "on the other side of the river." This Society sustains, and to the best of our knowledge originated, an institution deserving adoption by every other medical society in the land, we might say in the world, *i. e.*, a "Black Book," in which are recorded from time to time, by any member so desiring, the names of all patients willfully and maliciously negligent of their reciprocal obligations to their physicians. This "Black Book" remains in the custody of the Secretary, subject to inspection by the members at their pleasure—who, by thus putting on record the authors of their misfortune, protect each other from the danger of similar disaster.

There are in every community swarms of social sponges, vulgarly termed dead-beats, who, scorning to pick a pocket or rob a bank, have no hesitation in robbing physicians of their time and services.

For the preservation of the names of all such from unmerited oblivion, we commend to all Medical Societies the institution of the "Black Book." W. H.

The attention of our readers is especially directed to the history of a case of rheumatic endocarditis, reported in this No. of the JOURNAL by Dr. H. A. Johnson, Professor of Diseases of the Respiratory and Circulatory Organs in the Chicago Medical College. For the conduct of this case, Dr. Johnson has been most unjustly assailed in the columns of one of the secular papers by a member of the patient's family.

Those who know Dr. Johnson, personally or professionally, will ask of him no explanation or defense—his life and practice preclude the necessity for either. Those who do not know him, will find that the report is its own justification. W. H.

OFFICE OF THE MEDICAL REGISTER AND DIRECTORY OF THE UNITED STATES
No. 115 South Seventh Street,
Philadelphia, June 6, 1873.

DR. J. ADAMS ALLEN, Chicago, Ill.:

Dear Sir—It is *very* important to medical men that they appear in the Medical Register and Directory of the United States, with their proper educational and professional status. Please urge it on your readers, in your next number, to reply, *at once*, to the circulars sent them; or, if they have not received one, to apply to me. Very truly yours, S. W. BUTLER.

We comply with the above request most cheerfully, and as the most effectual mode of doing so, present to our readers the letter of Dr. Butler, entire, which speaks for itself.

Reports of Societies.

Illinois State Medical Society—Annual Meeting.

The twenty-third annual meeting of the Illinois State Medical Society, convened in Bloomington, May 20, 1873.

The delegates and members assembled in Durley Hall at 10½ o'clock A.M. The President, Dr. D. W. Young, of Aurora, occupying the chair, called the meeting to order, and introduced Rev. Dr. Wilson, who offered prayer.

Dr. T. F. Worrell, Chairman of the Committee of Arrangements, was then introduced, and delivered a brief address of welcome on behalf of the citizens of Bloomington. This was responded to, on behalf of the Association, by Prof. E. Andrews, of Chicago.

Brief addresses of welcome were also offered by Ira J. Bloomfield, on behalf of the municipal authorities; on behalf of the Board of Education, by J. A. Jackman, Esq., which were responded to by members of the Society, after which the meeting adjourned until 2 o'clock P. M.

On reassembling at 2 o'clock the Society proceeded to business. The Committee on Credentials made their report, and the roll of officers of committees was called by the Secretary.

The first paper read was the report on Surgery, by J. L. White, M.D., of Bloomington. This was an able and interesting report, and elicited considerable discussion.

Dr. Hamilton next presented a report on Fractures, supplementary to the report on Surgery. It was an extended paper, mainly made up of statistics.

Dr. E. L. Holmes read the report of the Committee on Ophthalmology. The Secretary also read an interesting paper on the Uses of Strychnia, prepared by Dr. F. C. Holtz, of Chicago.

The Society then adjourned until 7½ o'clock P. M., when they reassembled to listen to the address of Dr. Geo. T. Allen, on the "Civilization of the Age."

Following this address, Dr. McFarland read a paper devoted mainly to the subject of the Jurisprudence of Insanity.

The Society reassembled again at 8½ o'clock A. M. The first business in order was the report of the Treasurer, Dr. Hollister.

The report of Dr. Hamilton, on Fractures, was again called up and discussed at length by various members, particularly the points in relation to the possibility of preventing shortening in oblique fractures of the femur. It was the pretty unanimous opinion of the members that some degree of shortening would almost invariably and unavoidably result, although the statistics given in the report of Dr. Hamilton seemed to favor a contrary opinion.

The report on Drugs and Medicines, by Dr. Hollister, was next read and discussed. Dr. Prince, of Jacksonville, also submitted a report on Galvano-Therapeutics.

The Committee on Nominations submitted the following report:

For President, Dr. T. F. Worrell, of Bloomington; 1st Vice-President, Dr. E. L. Holmes; 2d Vice-President, Dr. Birney; Treasurer, Dr. J. H. Hollister. Next place of meeting, Chicago.

Committee on Practical Medicine—Dr. H. Crawford, Monmouth; Dr. John Wright, DeWitt; Dr. Van Horn, Jerseyville.

Surgery—Drs. W. P. Pierce, P. Raskatin, E. R. Willard.

Obstetrics—Drs. S. E. Plummer, C. T. Hassian, Robert Beal.

Drugs and Medicine—Drs. W. E. Quine, Chicago; R. W. James, Danville; E. P. Cook, Mendota.

Ophthalmology—Drs. E. L. Holmes, J. P. Johnson, F. C. Holtz.

Otology—Drs. S. J. Jones, Chas. Hunt, Thos. Galt.

Special Committee on Idiocy—Dr. C. F. Wilber.

Galvano-Therapeutics—Dr. D. Prince.

Pathology of Nervous System—Dr. C. W. Earle.

Dermatology—Dr. Chas. G. Smith.

Phthisis Pulmonalis—Dr. J. H. Hollister.

Strictures of Urethra—Prof. Andrews.

Diseases of Respiratory Organs—Dr. Daniel Lichty.

Committee of Arrangements—Drs. N. S. Davis, W. E. Quine, Chas. G. Smith, E. Powell.

Assistant Secretary—Dr. W. E. Quine.

The report of the Nominating Committee was unanimously adopted.

A report on "The Assistance Necessary and Justifiable in Difficult and Protracted Labor," by Dr. S. D. Hawley, was read by the Secretary. The report elicited extended and various criticism and discussion, which space does not permit us to report. The Society again adjourned until evening, the afternoon being spent, at the invitation of the Committee of Arrangements, in visiting the State Normal School, the Soldiers' Orphans' Home, and the C. A. & St. L. R. R. machine shops. At each of these places the Society was welcomed by the authorities in charge.

The Association reassembled in the evening session at 8 o'clock P. M.

Dr. Worrell read a report upon Hygiene, and in connection with it a supplementary report, prepared by Dr. N. S. Davis, on the Hygienic Management of Children.

A report on the Physiology of the Nervous System, by Dr. Earle, the report on Otology, by Dr. S. J. Jones, and a report on Obstetrics, from Dr. T. D. Fitch, completed the list of reports presented.

On motion of Dr. Hollister, the Association proceeded to the election of delegates to the American Medical Association, the following named being chosen:

Drs. A. H. Luce, J. O. Hamilton, E. Goodbrake, E. P. Cook, W. P. Pierce, D. Prince, C. T. Homer, J. H. Hollister, W. W. McMann, S. H. Birney, C. W. Earle, J. B. Walker, Haller, W. E. Quine, E. R. Willard, Whitmeyer, E. R. Travers, J. P. Mathews, E. W. Hewett, D. Young, T. D. Fitch, O. W. Moon, John Lyttle, A. C. Rankin, O. Everett, F. H. Davis, J. G. Curtis, S. E. Plummer, F. M. Wilder, J. L. White, A. S. McArthur, N. B. Cole, D. McVey, C. Armstrong, and A. McFarland.

Dr. Fitch moved that the Association proceed to the election of delegates to State Medical Societies. The motion was carried, and the following persons were elected:

Drs. G. W. Jones and Birney, to Indiana Medical Society; Drs. Gray and Ellsbury, to Ohio; Drs. M. Gunn and E. L. Holmes, to Michigan; Drs. McArthur and Irwin, to Wisconsin; Drs. T. D. Fitch and J. Galt, to Iowa; Drs. C. R. Cook and J. O. Hamilton, to Missouri; Drs. T. F. Worrell and E. R. Willard, to Minnesota.

A motion from Dr. Hollister that the annual assessment be fixed at $3 for the year, was carried.

After passing resolutions of thanks to the Committee of Arrangements, the municipal authorities, and others who had assisted in entertaining the Association, the meeting was adjourned *sine die.*—*Med. Examiner.*